The Builder.

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In Chester.

ARCHITECTURAL work in the walled city on the Dee seems to be for the present pretty nearly all concentrated on the restoration and refacing of St. Werbergh's Cathedral. The rebuilding of a few shops in the Rows of Eastgate and Bridge-street, during the last few years, in a style, for the most part, carefully assimilated to that of the old work, has not as yet been adopted as a precedent by the owners of the bulk of the property in those picturesque old-world streets, much of which still looks as though, were the end house removed, the rest of the buildings must of necessity come down in succession; while the consequences of a fire breaking out amid this beam and story-post construction would be of a nature not pleasant to contemplate. Having the aspect of these older buildings in view, it seems a questionable proceeding to perpetuate this carpentry construction in modern buildings, wherein, even if special care be given to ensure stability, the danger from fire must remain the same. There are other elements, however, as sure, if more slow in their effects than fire, and from which no structure can be guarded; and those who have spent money on half-timbered "fronts," may say, with some show of reason, that the old houses of the same class seem to have resisted the ravages of time and weather better than the stone walls of the cathedral adjoining.

In fact, the decree which went forth a little while since, for rejuvenating at least the external aspect of Chester Cathedral, came not a day too soon, whether the question be considered from a practical or an artistic point of view. Travellers who on approaching the city sighted the outline of the old heavy-looking square tower as a landmark, would have found on a nearer approach scarcely a recognisable detail left in many parts of the building; and at this moment, while the work of restoration is proceeding, the original design of many of the mouldings and decorations is being painfully traced out by the comparison of one old rain-beaten stone with another. The tower in its recent state presented to the eye hollows and pitfalls in the masonry alarming as well as unsightly to contemplate; and the aspect of this, and of much of the work in the aisle and clearstory of the nave, where a string-course is represented by an uncertain wavy projection in the masonry, and the voussoirs of the windows by shapeless lumps of stone from which nearly all trace of the hood-mould which must have crowned the window has been obliterated, might lead to the idea that restoration was a hopeless attempt, but that the cuts made into the masonry to prepare for refacing reveal the essentially solid and well-bonded character of the work. The sandstone used, doubtless from some part of the adjoining district, has, in fact, utterly failed as a weather-resisting material, though it is noteworthy that some of the oldest portions have stood better than more recent ones, as if an inferior vein of stone had been struck upon afterwards. The stone used in the restoration is mainly, if not entirely, from the Runcorn quarries, a few miles distant, and though belonging, of course, to the same formation as the original stone, is one of the hardest and best qualities of the red sandstone to be found in the neighbourhood, both as to texture and colour. It is singular that the Mediæval builders, careful in the construction of masonry above ground, should (in this case, at least), have shown themselves so careless as to obtaining adequate foundation and footing underground for their walls; at the east end the walls of the Lady Chapel have long been out of the perpendicular, and must remain so now, as it is not found convenient to take them down and rebuild them, though a great deal of underpinning has been resorted to, as a preventive against further settlement. The east window of the Lady Chapel was, in fact, restored some twelve years ago, being then in a most dilapidated, if not dangerous, condition; and, having regard to the heavy expense to be incurred in other parts of the work, it was thought advisable to make the most of this former partial restoration, although standing rather in the way of Mr. Scott's present designs, practical and æsthetic, upon the east end. The insufficient nature of the foundations at this point is further indicated by the fact that even in this comparatively new window the arches of the two outer lancets have visibly dropped away from the keystones. What, by the way, would some of our ultra-Gothic brethren say to the keystone arches, not only in this, but in Mr. Scott's restoration? We confess to liking the sight of the vertical joint at the apex in Gothic work, as visibly indicating the constructional theory of the pointed arch, the balancing against one another of two segments of arches; as a matter of construction the point is indifferent, save that the masons probably will prefer the keystone system as giving them less trouble.

The work now going on at the cathedral is divided into two portions. One section, for which a contract has been taken out amounting to 21,000*l.*, includes the refacing of the tower and of all the work to the west of it, also the rebuilding of the upper portion of the angle turrets in the tower and of the parapet connecting them. The tower has now been faced for about three-quarters of the distance from the nave roof to the parapet: below this the work is at present confined to the south porch, the heavy buttresses of which are being gradually refaced, indeed, nearly rebuilt, and the niches and other ornamental work over and in connexion with the entrance restored. The work about the eastern part of the building, which was not of a nature to be easily estimated for, is to be valued on subsequent measurements. This consists partly in similar refacing, the greater part of which has been completed in the clearstory; in the underpinning before mentioned, which has been a troublesome and expensive portion of the work; and in the rebuilding of the end of the south aisle adjoining the Lady Chapel. This last is the most interesting portion of the work. It has been rebuilt, at a late period, in a very debased style, and this portion it was the intention to restore, preserving what appeared to be the original plan, with a square end and a lean-to roof, but, of course, substituting true Gothic detail for the more recent "improvements." In taking down the masonry, however, with this object, indubitable proofs have been discovered of a former apsidal termination to this aisle, evidenced not only by the position and course of some of the old groin ribs still retained, but by the discovery of part of one of the original buttresses, standing obliquely at the angle originally formed by the first face of the apse with the main wall of the aisle, and preserved in almost its pristine freshness by the newer masonry built over it. Over this part of the aisle a weather-line on the south wall of the Lady Chapel furnishes evidence of the former existence of a high-pitched pyramidal roof over this apse, unlike anything usually found in English Gothic, and which has been conjectured to be in some degree connected with the fact of the rule at one period of an abbot from Normandy, who may have brought with him the taste for a style of roofing of which examples are not wanting in his own land. This can be little more than conjecture; nor would we undertake to say, from the rather hasty examination we were able to give to the building, whether we can quite concur in accepting this single trace of a steep-pitched roof as warranting the production of such a disproportionately lofty roof, almost a spirelet, in fact, as is indicated in the model which has been made for the restoration. Still less can we positively concur as to the advisability of replacing this roof, supposing the evidence of its original form to be conclusive. Had the original been left it would have had an undoubted historical interest of its own; but this interest cannot exist in a copy made, moreover, in some degree from conjecture; and in any other point of view than an archæological one, it must be regarded as an excrescence, out of keeping with the state and with the sober lines of the rest of the structure, and therefore on artistic grounds to be deprecated. Yet more strongly should we be opposed to the carrying out of the spire indicated in the perspective view of the cathedral as restored, which is exhibited in the Chapter-house. This is, of course, a timber and slate spire, as no one would dream of trying the old tower with the burden of a stone one. Now we doubt very much whether, merely as a matter of outline and composition, Chester Cathedral would not rather suffer than otherwise by the superimposition of a spire; the whole expression of the edifice is that of solidity and repose, and this unity of expression would be interfered with, and the old local associations, too, with the massive square tower which has marked the site of the city for so long would be lost; and such associations are not altogether to be despised. But to place a large slated or shingle spire on such a building as a cathedral, would be at once to deprive it of its monumental expression, to rob it of part of its architectural dignity and grandeur, and give it a patchwork appearance, picturesque in a certain way, perhaps, but far inferior in *architecturesque* effect to the expression of a homogeneous stone building. We object on this ground even to the crowning of the pinnacles at the end of nave and transepts with small conical roofs, as apparently contemplated; we would far rather see them finished with stone finials, whether of solid or open work; and, with regard to the central tower, we do earnestly hope that those with whom the decision finally rests will interpose a "thus far shalt thou go and no further" when the parapet is reached, and save it from being bonneted by the threatened termination. A rough sketch for an octagonal stone lantern to form an alternative finish to the tower, attached to the drawing before mentioned, would be in every way preferable to the spire, but we have our doubts whether even that would produce an effect commensurate with the expense of constructing it; and whether in fact the simple tower, restored as nearly to its original condition as may be, would not prove more effective, and

group better with its surroundings, than any finish that may be put to it.

The central tower of the new Town-hall, recently completed, is a new feature in Chester, and peers over—a modern visitor—into the sacred *temenos* of the cathedral cloisters, with a decidedly Norman-French air. Its general aspect is pleasing; though the circular plate-traceried windows in the gable on each face, consisting, of course, of a big round hole in the middle, and little ones round it, look painfully like a set of clock-faces, so that we almost miss the hands which we expect to see on them. It is to be regretted that architects often seem to overlook the very great effect which small details may have in increasing or diminishing the scale of a building. In the Town-hall tower the triple windows on each face have been filled up by two immense wooden louvres of great depth, an exaggeration of the Norman fashion. We have no hesitation in saying that these materially dwarf the scale of the tower, when seen (as it is from many points) out of connexion with the substructure, and that its apparent scale would have been rendered decidedly greater by the employment of a large number of smaller louvres. *Au reste*, the building is a pleasing specimen of the modern style of Gothic Town-hall so much in vogue at present,—more pleasing decidedly, than the average of such buildings, as it is quiet and unpretentious in treatment, and with thorough unity of expression throughout: moreover, the contrast of tint in the different stones employed is singularly happy and effective now that the building is new; it may, perhaps, be too delicate to retain its full effect for more than a limited period. As to the question of preserving and reproducing the Mediæval style in a city like Chester, much may be said on both sides. Were a general rebuilding of the principal rows to take place, we would decisively advocate the adoption of a style more in accordance with modern feeling and modern wants; sham antiquity is always contemptible. But as this does not seem likely to take place at present, it may seem only reasonable to endeavour, in isolated buildings, to avoid clashing with the *genius loci*. If such a feeling is reasonable anywhere, it is in Chester, for the preservation of the antique Mediæval aspect, to this extent, in a modern town, is so rare now, that it would seem a pity to lose this example of it, even to gain a little in comfort, convenience, and stability. To keep up the delusion fully, however, and cheat us pleasantly into dreams of the Middle Ages, we ought to have the costumes in keeping; whereas at present the chignons, mantles, hats, not to speak of other articles *propria quæ maribus* and *mulieribus* respectively, peripatetic in Eastgate-row, are unmistakably what an architect might call "nineteenth-century work." Perhaps some Mediævalising young ladies and gentlemen may take the matter up, and devote one day in the month (to be duly advertised) to parading their favourite Row in costumes judiciously selected from illuminated MSS. of the fifteenth or sixteenth century. The principle is the same as that adopted in rebuilding some parts of the said Row, and it would be much the less expensive amusement of the two.

CHRISTMAS DECORATIONS.

ALTHOUGH the decoration of churches at this season of the year has become the rule instead of the exception, there are several points of consequence connected with the custom that are not yet properly considered, and some coignes of vantage about it that are not duly estimated. The practice, indeed, appears to be in some danger of running to extremes before a due amount of sober usefulness is obtained from it. People are beginning to think of Christmas decorations only as manufactured articles they can buy by the yard or square foot cheaper than they can make them. This is, of course, losing sight of much of their poetry and picturesqueness, and of all the opportunity of artistic expression that the occasion affords. "There's rosemary," cried Ophelia, "that's for remembrance, pray, love, remember; and there's pansies, that's for thought." After this manner we should bear in mind the associations of idea and the meaning of the materials used in the decorations to which we are referring, as well as the proper methods of using them. Over and above these desiderata it should be remembered that the temporary decorations at Christmas time afford an excellent opportunity of realising the effect of many proposed permanent additions to the interior features of a church. Is a reredos contemplated? Make one at Christmas, and the improvement will be recognised and welcomed. Is a screen thought of? Try the effect in a skeleton framework of wood dressed with evergreens, when those interested will be the better able to decide on its merits. Is a church bald and cold-looking? Enrich it with parts most appropriate for its beautification temporarily, as Christmas decorations, and there will be eyes to see the improvement, and most probably purses ready to make the additions permanent. Are the wall spaces bare? Show specimens of a scheme of enrichment, and the issue will be, doubtless, prosperous. We might continue this string of questions for a column; but we hope enough has been said to convey a hint that may be useful to many.

Although most of the handbooks published on this subject dwell upon the importance of preserving the architectural lines of a building in the floral decorations of the season, several of them furnish illustrations in which such propriety is altogether lost sight of. Banners, medallions, texts, and bosses of foliage are dabbed here and there, in some cases with no preservation of lines whatever; and in other instances with only a feeble attempt to hang them in rows. These are the consequences of attempting to design schemes of decoration that will suit any church; and also of providing for the manufacture of many of the items in wholesale quantities in certain centres. We would impress all in charge of churches that there is no merit in decorating them all in the same fashion, any more than there would be in building them exactly alike. Originality, appropriateness, and beauty can be combined with as much diversity as charm. We suggest that the lines of a building are best followed by such methods as placing crestings where objects would be artistically enriched by them, and courses of foliage where these are not desirable. Detached dots are as patchy as festoons are theatrical, and suggestive of the *ballet*. Texts, as well as foliage, look well when following some of the leading architectural lines as faciæ or cornices or string-courses. Screens formed of evergreens, with cornices inscribed with illuminated texts, may be made very satisfactory features in large and lofty churches. In smaller edifices the decorations are more suitably confined to existing spaces and features.

When writers who have given time, if not taste, to the consideration of decorations go astray, we cannot be surprised that without trained guidance of any kind amateur decorators make very serious mistakes. Sometimes there is a committee of ladies formed, every member of which carries out a small idea of her own, which is independent of any general scheme. Some are Maries; others are Marthas; some are for tender lavishment; others for prudent frugality. One will take the font; another the pulpit; a third the reading-desk; a fourth will undertake a scroll to paste up over the doorway; a fifth will volunteer a star of Bethlehem to hang from the apex of the chancel arch; and so on: here a variety is certainly obtained, which may be like a peep-show, but is anything but pictorial. Red flannel, white cardboard, tinsel, coloured papers, everlasting flowers, others that are immediately perishable, more that are artificial, bunting, wire, cord, silk laces, cloth, calico, velvet, suggest the probable performance of a mystery play rather than special services in remembrance of the Nativity of the Founder of our faith. In another place there will be a committee of rustics who, in the fulness of their hearts and strength, will drag trees into the sacred edifice that convert it almost into a thicket. Again, the decorations are placed in the hands of the gardener of the neighbouring squire, and straightway the church becomes an irregular green-house. We have heard of wheaten flour being sprinkled upon the evergreen decorations of a country church to give the effect of snow, which was considered by the volunteer artist seasonable, and quite indispensable to carry out the idea of Christmas, even indoors. We have known other volunteers of this thorough-going kind cut out letters in scarlet cloth or flannel, and glue them one after another upon the mouldings of a chaste chancel arch, to spell out what they considered appropriate texts. All this earnestness properly directed would have produced a very different result. Thus left to run unrestrained, damage is often done to the fabric, great pieces are knocked out of plaster work, and good oak-work is riddled with rough nail-holes.

George Herbert is one of the chief authorities on the lips of most church decorators. His quaint conceits and similes furnish many a hint for typical devices, though the subject of decorations is not approached nearer than in his verses, entitled "A Wreath," beginning,—

> "A wreathed garland of deserved praise,
> Of praise deserved, unto thee I give."

He speaks of the Oriental fragancy of ambergris, the speaking sweetness of pomander, of cloves, nutmegs, and cinnamon, flowers, and garlands, but not of foliage, as applied to decorations. He gives us a warning, incidentally, however, that should be taken to heart:—

> "Love built a stately house; where Fortune came,
> And, spinning fancies, she was heard to say
> That her fine cobwebs did support the frame,
> Whereas they were supported by the same:
> But Wisdom quickly swept them all away.
>
> Then Pleasure came, who, liking not the fashion,
> Began to make balconies, terraces,
> Till she had weaken'd all by alteration."

Here is an intimation of the value of the point we urge. In all decorations there should be one considered scheme that takes in all the parts of the fabric, and is especially adapted to each of them. This settled, and shown upon paper, for reference, a division of the work can be next made, and much more easily carried out than without such guidance.

We perceive imitation evergreens and imitation holly-berries are now regularly manufactured to meet the demand for foliage at Christmas. Dried moss, too, has become an article of commerce for the same purpose. Everlastings, once sacred to the memory of Père la Chaise, are now pressed into the decorative service, and are not only dyed various colours, but spotted, to increase their motley appearance. Roses are made of white paper for half-a-crown a dozen, and more cunningly devised in pink paper for three shillings per dozen; and camellias deftly made of white paper, range, to adopt the phraseology of the market, from three shillings per dozen. These scentless theatrical adjuncts have elbowed and flaunted out three sweet old floral favourites, —rosemary, lavender, and rue. Once upon a time rosemary was as much a part of strictly Christmas belongings as roast beef and "plum-porridge;" but now, probably, almost the only instance wherein it makes its appearance in public is on the dish on which the celebrated boar's head is served at Queen's College, Oxford,—if, indeed, it has not been displaced there, too, of late years. The poet Gay speaks of rosemary and bays being "bawl'd in frequent cries through all the town" before he mentions holly, "lawrel," and misseltoe as signs of the season. The Christmas song, in Poor Robin's Almanack for 1695, mentions bays and rosemary, as well as holly and ivy, for decking of houses. The carol appointed to be sung when the boar's head was brought into the hall, as given in the book of "Christmasse Carolles, printed by Wynkyn de Worde, 1521," speaks of "garlands gay and rosemary" as the proper equipments of the dish. Ophelia, looking over her collection of gatherings, as before quoted, continues,—"There's rue for you, and here's some for me. We may call it herb of grace o' Sundays: you may wear your rue with a difference." The association of rosemary and rue with the tall delicate spiked blue lavender occurs over and over again in old English ditties and sayings. A graceful chapter, giving a gathering of quotations showing the association, may be found in Mr. Longstaffe's Hylton Chaplets.

> "Rosemary green,
> And lavender blue,
> Thyme and sweet marjoram,
> Hysop and rue,"

form a combination that is mentioned by Gerard with especial favour. In a word, rosemary, lavender, and rue, were fragrant favourites in the days of yore. The first-mentioned was so much so, that it stood for a sign for inns; as the celebrated hostelry in Finsbury Fields, called the Rosemary Branch, shown on old maps, as well as others, under the same sign in Islington and elsewhere still existing, bears witness. There was some subtle fancy connected with it, too, for a great body of Roundheads besieging Pontefract wore rosemary in their hats. Washington Irving failed not to see that it was something specially English, and noted it in his Sketch-book.

> "And lavender is passing sweet,
> And so's the rosemary,"

sang a singer long ago; but both have been elbowed out of place by paper roses and cambric holly. Surely it would be better to reinstate some of our old favourites than to have recourse to sham substitutes.

THE LIGHTHOUSES OF THE BRITISH ISLES.*

THE Gunfleet Lighthouse is erected upon the same principle, with this difference, that it is entirely built of wrought iron, upon seven piles, 15 in. diameter, screwed down 40 ft. into the sand, as being on the edge of a bank; its position is unusually precarious, in the event of a shift taking place in the sand.

The piles are in three thicknesses of wrought iron, and the whole of the bracing is tubular, of the same material. The angles where the braces cross are made of forged sockets of wrought iron, in one piece, hollow, to receive the ends of the braces: they resemble a huge four-way cock, and are certainly curiosities in their way.

The light is 41 ft. from the water. The internal arrangements are similar to the Maplin, but the cost was about 11,000*l.*

As a parallel example of insecure foundation, satisfactorily dealt with, we may here notice the lighthouse at the mouth of the river Usk, in Monmouthshire, though the means adopted were diametrically opposite.

It is built upon a foundation of soft, pulpy clay, the stratum being 37 ft. deep.

The old tower became insecure, leaned dangerously towards the water, and had to be taken down, and the method adopted for the new one was as follows:—

From a circular pit of 60 ft. diameter, as much of the clay was removed as the nature of the material would permit, and a depth of 9 ft. was reached; at this level an elm curb was placed, and the whole filled up with solid concrete, forming as it were a circular landing, 60 ft. across, and 9 ft. thick.

Upon this has been erected a circular brick tower, 40 ft. in diameter, and two stories high, containing commodiously, the living-rooms, stores, &c., necessary for the keepers, and the whole is surmounted by the lantern. The light is 45 ft. above high-water mark.

When the work was in progress, and for some short time after its completion, it gradually sank in the clay to a depth of 7 in., without any disturbance of the general level; it has remained at that point without further subsidence, and is now perfectly secure.

As a contrast between an ancient and a modern lighthouse, we cannot give a better illustration than the "Smalls." We will describe first the old house and then the new one. The old house was commenced in 1772, by Mr. Whiteside, and finished in 1775. The highest part of the rock is 12 ft. above the sea at high water, and the lighthouse was 70 ft. high.

It was carried upon nine oak piles, about 2 ft. 6 in. diameter, sunk 7 ft. in the solid rock, with six raking braces of somewhat similar dimensions, and when subjected to a storm the whole structure rocked so that a pail of water standing on the floor would be more than half spilt by the simple rocking.

This has repeatedly produced the effect of seasickness upon those unaccustomed to the motion, as proved the case when the workmen sent down to erect the new lighthouse were lodged in the old light room.

The house was only about 18 ft. inside diameter, and 10 ft. high, and was entirely constructed of wood secured together with wrought iron. It needed constant repairs: every summer new stays and other matters had to be provided from the time of its erection; a new house was more than once prepared upon the mainland, taken out in the summer, and fixed.

In this place occurred that terrible incident, of one of the keepers being taken suddenly ill and dying, when the season was so awfully stormy that no boat could approach. The survivor did not dare commit the body to the deep for fear of suspicion of foul play; however, having previously been a cooper by trade, he managed to construct a coffin and secure it to the external gallery, and here for four mortal months he was alone with the dead. The signal of distress was seen flying, vessels approached, but no boat could land; he was at length rescued, but so altered that he could hardly be recognised. We may think it wonderful that reason did not give way under the fearful ordeal; but ever since that time three men are invariably stationed in similar situations.

Fifty years ago the dues claimed for this light were 2d. per ton, now they are one-fourth of a farthing; yet the amount received is not materially altered, so vast has been the increase of our tonnage in this direction in the interval.

As a contrast to the above, we will now describe the new lighthouse.

It is 125 ft. high, of granite, the lower 29 ft. solid; above this, there are in succession the water-store, the oil-room, the general store-room, living-room, bedroom, and watch-room, each a separate story, and above the lantern; the accommodation thus provided replacing the little cabin on a tree top, which occupied the post and did the duty for nearly 100 years; and for which, with its dues, the Trinity Board had to pay the enormous compensation before quoted * (170,486*l.* 7*s.*). With regard to the practical construction, we may say the courses of which it is built are at the base 2 ft. high, each stone weighing from two to three tons, and that the courses gradually diminish till at the top they are 1 ft. 3 in.

The joints are plain square joints, radiating from the centre, and each stone is secured to its neighbour vertically and horizontally by strong dovetailed slate dowels.

The stories are divided by landings, each in twelve stones, eleven radiating from the circumference to the centre, and a rebated stone dropped into the centre making up the number, leaving a well-hole for the spiral staircase, which ascends throughout the house; thus replacing the old rope ladder of the old house, which was drawn up and secured when not in use, and formed the only means of access.

Where the light has to be placed upon the top of a cliff, the erection becomes a far more simple affair. We may instance the new house recently erected at St. Bees, near Whitehaven. The elevation of the light is 336 ft. above high water.

The residence for the keepers, which may almost be called a small villa, has a tower 30 ft. high, attached by a covered corridor. At the top is the lantern.

The total cost, including apparatus, was under 5,000*l.* It was built with the red sandstone of the district. It is only within the memory of the present generation that the old coal beacon was discontinued, and replaced by modern appliances.

The development, if we may use the term, of the lighthouse system and its extension in the future will probably take the following direction. The erection of rock lighthouses upon reefs farther removed from the mainland, where the construction of the foundations is the greatest difficulty, and demand the utmost efforts of the science of the day.

The Wolf Rock Lighthouse, just completed, is the last, probably the best, as it was the most difficult of recent undertakings. A carefully detailed account of its design and construction will be brought before the Institution of Civil Engineers in the course of the ensuing season.

The next important feature is the substitution of pile lighthouses for floating lights. Here the difficulties of sand foundation have generally to be dealt with. This, however, is rather a measure of economy than extension, and has for its motive the annual economy of a fixed light, as compared with a floating one, as before mentioned.

Those who would like to study in full detail, course by course, and almost stone by stone, the erection of a great rock lighthouse, we may refer to Mr. Smeaton's well-known work on the Eddystone, and to the similar one by Mr. Stevenson on the Skerryvore.

The Lights.

After our rapid sketch of the constituted authorities, and the funds at their command, and notes upon various matters of interest in the erection of the lighthouses, we now come to the question of lights. What were the lights of olden times? Beacons, simply: large fires—primarily wood, latterly coal.

The last coal-beacon used was at St. Bees, and was extinguished so lately as 1822. They were efficient in their way. The old coal-beacon at Spurn Point, the mouth of the Humber, could be seen for thirty miles.

When the Eddystone was first lighted, it was with a chandelier of twenty-four wax candles, five of which weighed 2 lb. At that time the great Cordovan lighthouse was lighted with billets of wood, and oil-lamps with reflectors were just coming into use.

The lights under the control of the Trinity Board vary from a simple gas or oil lamp, probably kept up by a local board, and costing a mere trifle, to the larger Argand burners used singly or in groups, sometimes as many as thirty each, with its separate reflector, till we come to the first-class dioptric lights of the largest class, with their elaborate and expensive arrangement of lenses, costing about 2,000*l.*; the expense of erection, maintenance, and attendance proportionally increasing.

The great object in lighting arrangements is, of course, to obtain the maximum of light with a minimum of cost, and to ensure the direction of the light to the proper point. Some attempts in this direction were made with the old beacons, but we have no record of anything satisfactory or successful. But with the Argand and similar lights, and our recent scientific researches, immense improvements have been made in this direction, and by the judicious application of the proper means, the scope and direction of the lights can be managed to a nicety; and not only is the efficiency of the light increased, but, by the careful direction of all, as they may be called, stray rays in a proper direction, a distinct economy is the result.

The invention of the Argand lamp, in 1780, was the first great step to the improvements above alluded to.

As is well known, in principle it consists of a cylindrical wick open in the centre, and covered externally by a glass chimney. To the present day its modifications are the principal instrument in our lighthouse system. The later discoveries are the Drummond light produced by jets of oxygen and hydrogen upon a ball or cylinder of lime, and the magneto-electric light produced by the direction of a powerful magnetic current through two opposing points or pencils of charcoal; they have both been employed in first-class lighthouses to a limited extent. Gas-lighting has also been tried; but at the present moment nine-tenths at least of the light of our lighthouses comes from the Argand burner with colza oil. It is employed in various ways with many scientific applications, which grow day by day in perfection and complexity. The systems of lighting all houses of the first-class may be divided into two—the catoptric and the dioptric; the principle of the first being reflection, that of the second refraction.

On the catoptric plan a number of lights are usually employed, ordinary Argands, of about 1 inch diameter, each with its separate silvered parabolic reflector. The power of the light becomes a question of simple multiplication; a second-class catoptric has eighteen burners, a first-class one thirty.

On the dioptric principle one central light is used—either an Argand of great size with four concentric wicks, a Drummond, or a magnetic light; and the direction and concentration of the rays are controlled by a scientific arrangement of prisms of glass disposed all round the light generally in a circular form. The angles and proportions form an element of the nicest mathematical calculation, and we may fairly say that upon this head there is yet much to learn, and that it is in this direction that future improvements will develop themselves. Messrs. Chance, of Birmingham, have been distinguished for the great attention they have paid to the manufacture, and the success that has attended their efforts. The cost of these various lights varies in proportion—the new light recently erected at the Smalls costing 1,600*l.* (dioptric), the catoptric apparatus being much cheaper; the larger outlay, however, repays itself in course of time by the economy of working, an extensive average calculation, showing that the annual outlay of a first-class catoptric is about 340*l.*, while a first-class dioptric costs only about 265*l.*; the principal item of difference being the oil, of which the large central lamp consumes less than the thirty small Argand burners. And here we may notice the great advance that has been made in the construction of the lanterns that enclose the lights as well as of the lights themselves.*

When the dioptric light was first introduced at the Eddystone, the upright divisions of the glass were about 5 in. wide; the following was the result:—From a Government vessel in Plymouth harbour a letter was written to the authorities in London, stating that at a day and hour named, the Eddystone light was *out*. An immediate inquiry was ordered, and it was ascertained beyond a doubt that such had not been the case. It was suggested

* See p. 958, *ante*.

P. 958, *ante*.

* Illustrations will be found in earlier volumes of the *Builder*.

that the vessel might have anchored in the line of shadow caused by one of the bars. A yacht was sent round to make accurate observations as to whether this effect really was produced, and a cruise round the light at some distance convinced everybody that this was what had really taken place.

To obviate the difficulty, a lantern was designed by Mr. Stevenson, the engineer to the Northern Commissioners, composed entirely of triangles, without any upright bars, each pane, as it were, forming a three-cornered facet of flat glass, and this was a great improvement; the drawback was that a large proportion of light was lost by reflection: it was almost impossible to fix the glass in the facets perfectly true, and consequently the light was reflected in quarters where it became useless, the loss being estimated at about 10 per cent.

Mr. Douglass, the engineer to the Trinity Board, then invented the present lantern, which is a perfect cylinder, divided into lozenge-shaped panes, by a bar following a true helical coil, so that at every point of contact the side of the bar is at a true tangent with the circumference of the cylinder, and the maximum of strength is gained with the minimum of obscuration.

The bars are of rolled steel, 4½ in. by 5-16ths of an inch, with a bead of gun-metal, L shaped, and ¼ in. thick to secure the glass; the outer edge is finished with the ordinary astragal and hollow, and the inner edge, the gun-metal, is rounded; the bars are all rolled in halves, and each lozenge-shaped pane is complete in itself; they are built up, as it were, and fastened together with rivets, the right and left hand lozenges meeting at any given point, thus forming a complete stay and connexion with the panes above and below. The glass is bent exactly circular to the lines of the lantern, consequently both lozenge frames and glass are everywhere interchangeable. In case of any strain occurring to the lantern and breaking the glass, a fresh pane can easily be substituted by the keeper without a skilled workman. To show the perfection of the construction, however, we may say that though fourteen lanterns have already been constructed upon this principle, there has not yet been one broken pane of glass. We may add that this construction of lantern was most carefully investigated by the late Professor Faraday before its final adoption, and that it reduces the loss of 10 per cent. of lights upon the old system to 3 per cent.; while the bent glass has been proved by experiment to be 68 per cent. stronger than the flat. There are six different recognised sizes of dioptric lights, and as many or more of catoptric; and, besides the distinction of size, different lights are exhibited, in different ways, and in different colours, to enable mariners to distinguish one light from another.

They may be distinguished as fixed, revolving, flashing, intermittent; the times of different lights varying in their intermittance from five seconds, with many variations up to four minutes. Many lights, harbour lights principally, are coloured, blue, red, or green. It will be seen what infinite varieties of combination may be introduced by these various means; the intelligence so conveyed may fairly be called the language of the lighthouses.

To give our readers a general idea of the lighting of our coast as a system, we will ask them to accompany us in an imaginary cruise from the Nore to Dover, noting simply the lights as we go.

We start from the "Nore Light-vessel," which shows one bright white light revolving at intervals of half a minute. We next pass the Girdler Light-vessel, showing a similar light; then the Princes Channel Light-vessel, showing a red light revolving every twenty seconds; and the Tongue Light-vessel, which shows two fixed lights, the upper one white, the lower one red.

This brings us to Herne Bay, showing one white fixed light on the pier head; then Margate, with a red light on the pier head; next the Mouse Light-vessel, with a green revolving light.

Then the "Maplin" pile lighthouse (before described) with one red fixed light.

The Swin Middle Light-vessel, one bright light, with a revolution of one minute; the Gunfleet pile lighthouse (described at the commencement of this paper), with a red light revolving at an interval of two minutes; the Sunk Light-vessel, one bright fixed light; and the Kentish Knock ditto, with one bright revolving light, of one minute revolution; and the Galloper, two fixed lights;—these bring us to the North Foreland Lighthouse, with tower 78 ft. high, light 184 ft. above high-water mark, fitted with a dioptric apparatus of the first class, showing one bright fixed white light; then the Ramsgate Tide-light, one red and two green lights; the Godwin Light-vessel, three bright white fixed lights; the Gulf Stream ditto, one bright light, with revolution of twenty seconds, to the South Sand Head Light-vessel, at the other extremity of the Godwin Sands, showing one bright fixed light. Next, the South Foreland, with two bright fixed lights, 1,300 ft. apart, until we arrive at Dover, with one green light, two red lights, and one blue light on the Admiralty Pier. It would be tedious to follow this detail further. The sketch we have given may, however, be sufficient to convey an idea of the variety of method and adaptation of light.

In England there is upon an average a lighthouse to every fourteen miles of coast; in Scotland, to every thirty-nine miles; and in Ireland, to every thirty-four miles. In this calculation, however, the light-vessels are not included; and, of course, in the more frequented channels, as in the case just quoted, the lights are much nearer together than elsewhere. On some portions of the Scottish and Irish coasts more lights are certainly required; but as far as England is concerned, the general opinion seems to be that the system of lighting is sufficient and satisfactory. Of the lights under the control of the Board, about 50 per cent. are dioptric, and the remainder catoptric, and of the local lights, about 25 per cent. In Scotland, about two-thirds are on the dioptric principle; and in Ireland, one-third. The consumption of oil has occupied in past days much attention as a question of economy; but the principle has lately most judiciously been adopted of sacrificing this point to the thorough efficiency of the light. Something resembling the French moderator principle is adopted. The oil is supplied to the lamp by mechanical pressure, and it is found in practice that the best light is obtained where the overflow is about three times the consumption.

The old Smalls Lighthouse (described above) only burnt about 200 gallons of oil per annum. About nine years ago the average consumption at the Start Point and North Foreland was about 500 gallons; but at the present time the usual consumption of a first-class dioptric is 700 gallons. The cost of a first-class dioptric apparatus complete, with lights, apparatus, and lantern, is about 3,000*l*. It is about 9 ft. high and 6 ft. diameter. The second size is about 4 ft. 6 in. diameter; the height in proportion; the cost about 2,200*l*. The third size about 3 ft. 3 in. diameter, costing 1,500*l*.; the fourth, 20 in. diameter, costing 400*l*; the fifth, 15 in. diameter, costing 350*l*.; the sixth, 12 in. diameter, costing 220*l*.

Combinations of the catoptric and dioptric systems are respectively called the catadioptric and holophotal. Mr. T. Stevenson also invented a light, called the Azimuthal Condensing, the object of which was to direct the whole of the rays down one narrow channel, confining, as it were, the horizon in every direction. The distance to which lights are visible is bounded by the horizon. Sufficient elevation being given, it has been ascertained that in clear weather a first-class light may be visible at 100 miles. Practically, 250 ft. from the water are considered the maximum; this gives a horizon of eighteen miles, or twenty miles from the mast-head. When a light is too high it is liable to be obscured by fogs, with the most dangerous results; as a case in point, the light at the Needles may be quoted, which was actually removed from a tower on the top of the cliff to a much lower level, so as to be more readily observed by passing vessels.

The last novelty in pharology is the division of the lantern into sectors of different coloured light. Thus throwing a light of a different colour towards different quarters of the horizon. We will give one or two examples. The approach to the port of Sunderland presents two dangers; the Mill Rock on the one side, and the Hendon Rock on the other, situated at some distance along the coast; it is a dangerous coast in the immediate vicinity of Whitburn, a name connected deservedly or undeservedly with false lights. There are two lights now designed and in course of erection: the upper one, a first-class light, with a one-minute flash; the lower light so arranged that the sector which exactly subtends the Mill Rock throws a *white* beam over that portion of the horizon; while in the sector which subtends the Hendon Rock a red colour is shown. With these guides ships approaching from either direction, by skirting, as it were, the division of the lights, are safely guided to the point where the harbour lights, closer in shore, show the exact entrance. A similar arrangement is made at Caldy, though modified by circumstances; there is a white light out to sea, a red ray or sector eastward, and another red ray or sector westward. By skirting the division of lights west, the shoals off the old Castle Burg are cleared, and the east ray clears the Woolhouse Rock. The anchorage is gained by passing through the red ray at this point, until the fainter white light at the back appears, which defines the safe anchoring-ground.

Another instance, at another port, shows two wide sectors of red light, with a narrow white sector between them, which safely conducts the vessel that follows it to the very mouth of the harbour.

In concluding our paper upon the lighthouses of the British Isles, we may remark that the most perfect system of lighting cannot insure the safety of our ships: it can only warn in case of danger. Sometimes the fury of the storm defies all precautions; and before all else the safety of a vessel depends upon the knowledge, the judgment, and the vigilance of its captain.

INTERNATIONAL CONGRESS ON EDUCATION IN INDUSTRIAL ART.

The general silence of the press of this country as to the proceedings of an important Congress, held in Paris during the month of October, 1869, is such as to prove that the busy gleaners who cater for the demands for public information, may sometimes overlook fields of no ordinary richness. Few of the popular questions of the hour, lashed as they are into fictitious life by the scourge of the journalist, as a top is kept in movement by whipping, have the real national and international importance of the proceedings of this unnoticed assembly.

The Central Union of Fine Arts applied to Industry (*L'Union Centrale des Beaux-Arts appliqués à l'Industrie*), opened at Paris, in the Palace of the Champs Elysées, an international Congress, which held session from the 29th of September to the 5th of October last. The president was M. Louvrier de Lajolais,—it looks almost as if his name should be spelt with the apostrophe;—the vice-president, M. Paul Bénard, architect. The honorary presidents were M. Guichard, the president of the Central Union, and Mr. Cole, director of the museum at Kensington; the honorary vice-presidents, M. de Schwartz, counsellor of his Imperial and Royal Apostolic Majesty, and Austrian Consul-General at Paris; M. Canneel, director of the Royal Academy of Ghent; General Novitzky, aide-camp of his Majesty the Emperor of Russia, and *attaché* to the Russian Embassy in London; M. Baumer, professor of architecture to the Polytechnic School of Stuttgard; and M. Sajon, vice-president of the Central Union. Among the secretaries we find a manufacturer and a designer of lace, a professor of drawing, and a professor of sculpture. Thus art, both fine and industrial, is adequately represented by the composition of the "Bureau."

M. Émile Galichon, whose eminent services to art literature are well known to all who are familiar with the subject, has expressed opinions with reference to this industrial congress, with which we are disposed very fully to sympathise. Having expected nothing, or next to nothing, to result from the discussion, he took the occasion which offered itself on his being asked to return thanks to the president, to declare, with the most perfect candour, that he had been entirely mistaken. In the six sessions to the proceedings of which he had been a silent and attentive listener he learned, he declared, more than he had done in ten years of his life. Little by little the horizon extended itself before his view. New ideas arose, and mutually illustrated one another. The gaps and breaks of his thoughts became filled up, and points that had long been obscure became clear and intelligible. A great and important step in the knowledge of the arts of design has been attained by the labours of the congress.

In the Palace of the Champs Élysées have been united to an Oriental museum, and to an exhibition of modern works, specimens of the work of pupils belonging to more than three hundred schools. The presence in Paris, at the same time, of so many professors and teachers, both French and of other nationalities, has thus been wisely turned to advantage, in order to

draw up an exact report of the present state of art education in France, and to suggest the best means of developing and improving the same. In the assumption, by private co-operation, of that initiative which has hitherto been considered to appertain exclusively to the Government, not only in France but generally on the Continent, lies the first step of a veritable revolution, commenced without tumult or violence, from which it is not difficult to augur the happiest results.

Acquaintance with the arts of design can no longer, in this nineteenth century, be considered a non-essential part of education. The progress and the permanence of those important branches of industry which so largely contribute to the national welfare depend mainly on the possession of an enlightened and educated taste. Without culture in this respect it is in vain to hope for any but a limited, and strictly home, demand for the various art manufactures, whether textile, ceramic, metallic, or of mixed and compound origin. A lump of clay, in the hands of an uneducated rustic, remains a mere clod of earth, or, at the best, is fired as an unsightly brick, or an archaic garden-pot; placed in the hands of an educated workman, in the same space of time it may be fashioned into a work of art, of value and of beauty.

The questions, then, which were debated, and to a great extent decided, by this self-convened International Congress, have a high economic and social value. Those narrow and limited views as to the wealth of nations, which were received with so much respect, by men in the van of intelligent life, because they were new to men unacquainted with the works of Aristotle, and because they were true, in themselves, although false, if regarded as constituting the whole doctrine of political knowledge, are being reduced, year by year, more distinctly to their proper proportions. Year by year we are learning that a market is not a school; that to buy cheap and to sell dear is not the chief end of man. Nay, what is of even more importance, the idea has become intelligible, and soon must become dominant, that an exclusive devotion of the energies of a people to those lower and less noble objects has a certain and fatal tendency to defeat itself. The man who is content to turn out the cheapest and the least artistic productions, hoping to command custom by the mere brute force of low prices, finds his customers falling away from his wares. People are beginning to find out that excellence is economical; that low price does not mean actual cheapness; that the productions of a good chemist, a good mechanic, or a good artist, are actually worth much more money than cheap drugs, clumsy machinery, or ugly and ill-constructed articles of domestic use. And, as it is not possible to select and extract the money-getting faculties or functions of the mind, and to cultivate them exclusively, but, on the other hand, it is always uncertain when and how the special advantages resulting from general culture may become available, so it is that, in spite of the venomous hostility entertained by a certain class of politicians to all artists, all men of taste, all men of refined culture, all men of classical education, the guidance of the future instruction of the people is gravitating irresistibly to the hands of this intellectual aristocracy.

In a word, Art, using the term in the widest sense, from being the delight of the few, is about to become the benefactor of the many. The neglect and despite of art is no other than the retrogression of a people towards barbarism. There are, it is true, many minds whom that argument must altogether fail to reach. It is well, therefore, that it can be put in different terms. Neglect of art-culture is a certain cause of national poverty. It is in this view of the case that the advance of any one of the European family of nations in education, whether scientific, technical, artistic, or literary, acts as a spur and a goad to the progress of every other nation. The electric chain has become complete, the contact being effected in the sensitive region of the pocket; and any advance made by Prussia, France, Italy, Belgium, must, *periculo nostro*, be responded to by a great effort in England.

Four distinct questions have been submitted to the International Congress. Each of these has been clearly stated and intelligently discussed; and with regard to each the congress has expressed both a judgment as to actual fact, and a desire as to the course to be adopted in the future. We proceed to refer to these questions in the order in which they were discussed.

The first question thus raised was that of the character and conditions of modern productions in industrial art. On this subject the congress forms the opinion that the dominant character of contemporary production is that it is essentially "mobile," by which term the reporters seek to express the capricious variations of fashion. Further, it is pointed out that the desire to produce objects in great numbers, in great variety, and at a low price,—a desire which is ministered to by the employment of machinery and by the infinitesimal division of labour,—is, in general, diametrically opposed to the existence of any true art sentiment in the objects fabricated.

Under this head the congress further calls attention to the preference given to routine as compared to the encouragement of personal initiative; the preference given to a mechanical perfection of surface detail, to the neglect of the general subordination of harmonious finish; and the frequently misunderstood application of scientific discovery. Thus far the work of the congress seems directed rather to the indication of some of the rampant evils of the day than to any attempts to remedy them.

The second question relates to the nature of public taste, and of its influence on production, and to the means of developing and of improving the same.

Public taste, the congress holds, is the exact reflexion of the intellectual and moral condition of society. So striking a proposition demands attentive meditation.

The principal causes to which the imperfection or the capricious character of taste may be referred are, first, the tendency to prefer the perfection of mechanical finish and detail to the true sentiment of art. Secondly, the general inclination towards apparent, rather than towards essential, excellence. The union of these two causes exercises a deplorable influence on production.

The remedy for this state of things lies in the creation of a general and complete system of education in all matters relating to art, by means of which sound views may be communicated to all classes of society. It is difficult to impugn the abstract truth either of the described evil, or of the proposed remedy.

The third question raised by the congress is that of the actual organisation of the theory of the arts of design, of the development to be given to that study, and of its direction, considered with regard to teachers, to methods, and to examples.

The congress declares that the actual organisation of tuition in art is not adequate to the requirements of the day, because, in the first place, the examples handed down to our times are imperfectly known and generally ill understood, from want of well-regulated education; and, secondly, the study of nature is generally insufficient and ill-directed.

The congress declares that it is necessary, first, to insist on primary instruction in the preparatory study of drawing; secondly, to develop the taste from early infancy by the daily view of what is beautiful in all its forms; thirdly, to give a great and entirely new importance to museums of instruction, in villages no less than in towns.

The congress expresses the desire that instruction in drawing should form an integral part of the obligatory course of primary instruction.

It declares in the most distinct manner, that, in its opinion, instruction in the art of design admits of no radical division, admitting in the matter of tuition but one law, and one principle, viz., the *Unity of Art*.

The congress denounces that mode of primary instruction which is limited to the servile and textual imitations of the graphic model.

It expresses the desire that, from the very commencement, the pupil of the primary school should have placed before him the geometric models which constitute the *Alphabet of Forms*, as well as examples of the most simple ordinary objects.

It recommends, as indispensable, oral explanations on the part of the teacher.

The congress disapproves the present direction of secondary education, in so far as it leads to the abuse of the graphic model.

It declares that a proportioned mode of rendering (by reduction or enlargement in size), drawing from memory, and the free choice of methods of execution, should be substituted for literal and servile copying.

With reference to *professional instruction*, the congress expresses the desire that, in all the schools, attention should be given rather to general instruction than to any particular industrial application, such as the demands of manufacturers require.

In such premature labour it can see only danger both to art itself, and to the future excellence of the pupils.

For the instruction of teachers for the primary schools, the congress demands the extension of instruction in design in normal schools, by the assistance of special professors.

It consequently requires the foundation of a superior normal school, for the education of these professors.

As to *method*, the congress neither recommends nor proscribes any special method; although it warns against those which, by the employment of rapid and mechanical processes, tend to diminish direct, personal, and sincere observation on the part of the pupil.

With regard to models, the congress blames the use of all such as involve the serious fault of leading to the substitution of the study of the picturesque effect, which is only accidental, for that of form, which gives permanence of character.

The fourth question relates to the comparison of the efforts hitherto made, in different countries, to advance industrial art, to develop public taste, and to improve the method of instruction in the arts of design.

The congress remarks with satisfaction that, for some years, a movement has been manifest in public opinion, tending, in all civilised society, towards the extension and the progress of industrial art, the improvement and the generalisation of instructionin the arts of design, and that development of good taste which exerts a distinct moral effect; and that, under the influence of this excellent spirit, efforts have been made and are daily making, due to the initiative of Governments, of associations, and of private individuals, which have already led to the creation of important institutions, museums, schools, societies, and the like.

The congress expresses the desire that effect should be given to the proposal made at the close of the Exhibition of 1867, and approved by the honorary presidents of all the International Commissions, to the effect that each country should execute reproductions of the objects of art which it may possess, and should spread the knowledge of such treasures as far as possible through other countries.

The concluding recommendation is to the effect that serious attention should be paid to the improvement of the condition of the professors and teachers of the arts of design, because it is on this condition that the quality of the instruction which they impart must essentially depend.

It is undeniable that the philosophic grasp and sound practical good sense of nearly the whole of the conclusions and recommendations of the congress are such as to justify the strong terms in which M. Galichon has allowed himself to speak of the result of their labours. To ourselves, almost the most interesting reflections that are suggested by the report will be those which concern the application of the conclusions of the congress to the actual system which, under the impulse of the Department of Science and Art, has been within the last fifteen years introduced in our own schools.

As far as regards the first two questions, the ill-regulated character of contemporary production, and the untaught caprice of public bad taste, no less than the fourth, the development of public taste, the general remarks we have already cited are most pointedly applicable to our own country. Nor are we altogether unaware of the primary necessity of a well-designed education of public taste.

For the third point, the education of the taste from early infancy, by the view of what is pure, noble, and beautiful, it is one on which we have been long accustomed to dwell with a persistence which has not always met with warm and intelligent sympathy. We rejoice to see the necessity of this course indicated as a canon of education. Nor must it be forgotten that the law is universal. It is negative no less than positive. It applies to literature, music, dramatic representation, all forms of moral and religious teaching, no less than to art-education. It involves the proscription of the coarse, the base, the meretricious, the tawdry; in one word, the false—in every department of human thought. Brutalising games, of chance or of violence; demoralising exhibitions of all kinds; literature, illustrated or otherwise, which, under the stolen appellation of comic, never rises above buffoonery; high-strung moral or religious discourses,

the tenets of which are contradicted by the tone, the appearance, or the daily life of the teacher,—all these stumbling-blocks in the path of true intellectual and moral culture, are condemned by this noble utterance of the International Congress.

With regard to the abuse of the graphic model, we think we have reason for great satisfaction in the superiority of the method adopted in our schools of art over that which the congress appears to consider to be almost or altogether universal. The selection of the best and purest examples of what is happily termed the alphabet of form, the definite study of the principles, in preference to the mere details, of design; the successive or alternate presentation of designs on the flat, of well-executed relief, of models in the round, of natural forms of vegetation, and of the living model, to the student, are distinct elements of our normal art-education. We call attention to the report of Mr. R. Redgrave, R.A., in the year 1857, on the state of design as applied to manufactures, treating of the great questions of style, of constructive truth, of the subordination of decoration to utility, of the special character of ornamentation suited to different materials, of unity of style and decoration, of subordination, and of the exigencies of size and of scale.

As to the danger, indeed, pointed out by the congress, which menaces both the progress of art and the future of the student, arising from the displacement of general and thorough art education by the study of those special branches which may command a direct pecuniary return, we hold, as we have previously stated, that it is the evil which most imminently threatens the development of our own art schools. One defect, as it appears to us, of our own system, is the strong tendency which it has to blind the pupils to the fact that, after all, decoration is but the 'prentice-work, or the amusement, of the artist. The rude diction of the Scottish poet shadows forth a truth far more noble than often lies concealed under the fugitive disguise of lyric song. The "'prentice-hand" of Nature was tried in the production of strength and of utility,—the more perfect exercise of her skill was devoted to the creation of beauty.

As to that which relates to the status of the teacher, it is unnecessary for us to express our hearty concurrence. We recognise in the decisions voted by the congress one of the most promising signs that have yet appeared as to the education of the future. We desire to supplement one omission, that of recognising that it is to the wise and patriotic effort of the late Prince Consort of England that the plan, recommended by the congress, of the reproduction and interchange of national art treasures owes its origin. But had the congress only emitted two of its many valuable votes it would have rendered a noble service to humanity. To those two utterances we are desirous to give the widest circulation, and the most faithful echo. We refer to the importance of elevating the mind, from early infancy, by the daily view of what is beautiful, and to the enforcement of "one law and one principle, the unity of art."

THE ROYAL ARCHITECTURAL MUSEUM.

Some evidences of life are apparent in the Museum, in the shape of a further appeal for money. Subscribers are invited to double their subscription; and one original member writes to us to say that he certainly will do nothing of the kind till he sees some endeavours to obtain more satisfactory results than are at present apparent. The hours during which the Museum is open and the arrangements made virtually shut it against working men, even if they were anxious to avail themselves of the collection, which unfortunately few of them seem to be. It is impossible to ignore a very widely-entertained impression that the building is unsatisfactory—in no way adapted for study. One "Would-be Student" writes us that he found it simply impossible to sit on the tiled floor, in a frightful draught, to make a sketch he desired to have. Some alterations must be made in this direction, also in the arrangement, if the word may be used, of the casts. The staircase is perhaps the most abominable thing in plan that ever was seen. It is so out of square with the side walls and the pavement that a view backwards from the landing is calculated to produce vertigo. One would be curious to know which of the two architects employed will take the credit of it.

However, all this will get righted in time: the value of the Institution properly administered remains, and the Council are anxious if not lucky. They have just now issued a proper invitation to members, that, being desirous of making their collection available for the study of architectural pupils, students, and draughtsmen, to such all the advantages of the Museum through its lectures, collection, &c., are offered for a subscription of 10s. a year, and they ask the names of any gentlemen who wish to join for the year commencing January 1. They are also co-operating with the Institute of British Architects and the Architectural Association to bring about the establishment of a school of architectural drawing to meet in the Museum. A joint committee has been formed and rules have been framed for discussion. This school might be rendered subservient to the maintenance of the Museum, as well as highly advantageous to the rising generation of architects. Strenuous efforts should at once be made to render the collection more completely a museum of architecture than it can be deemed at present, representing as it does little more than one division of the art. As one of the first and fastest friends of the Institution, we shall be credited with a desire to say nothing but what is likely to advance its interests.

THE FEMALE SCHOOL OF ART.

Miss Julia Pocock stands so completely at the head of the exhibitors on the present occasion, that 1869 will probably be spoken of in the school hereafter as her year. By a very clever drawing from the cast, she has obtained the Queen's Gold Medal, while for a charmingly painted head of a girl in prim, if not Puritan, costume, she has the Queen for purchaser; and her Majesty may be congratulated as well as the artist. When we add that Miss Pocock also exhibits the model of a hand, which has obtained the M'Arthur prize of 5 guineas, and that she also gets a prize from the Department, it will be seen that Miss Gann has, at any rate, one pupil of whose progress she may be justly proud. But there are others with nearly equal claims. Miss Whiteman Webb gets the National Silver Medal for fruit admirably represented, and one of her flower-pieces we like even better than the fruit. Miss Alice Locke has a charming arrangement of flowers; Miss Blanche Macarthur exhibits two very effective heads in oil from the life; Miss Alice Manley maintains her position gained last year; and Miss Lavinia Dixon makes an advance.

Miss Slous worthily gets a prize for modelling; and in the same department Miss Ellen Macræ deserves praise.

Some friends of the school have lent a number of paintings and drawings, which will remain for a time for the study of the pupils. It may be well to mention that a class meets on three evenings in the week, Mondays, Wednesdays, and Fridays, from seven to nine, for the study of elementary and model drawing, geometry, and perspective, and that schoolmistresses, teachers, and pupil teachers of National and British Schools are admitted at half fees. The fee for the advanced class for the study of water-colour, figure from the round, &c., is 6s. per month, or 1l. for five months.

LECTURES ON ARCHITECTURE AT THE LONDON INSTITUTION.*

Professor Kerr proceeded to consider the Gothic revival. Still confining his attention to our own country, and now with more especial reason, he returned to the seventeenth century, and remarked that while the revived or more properly modern Classic style was becoming established by the spirit of antiquarianism in Italy, and beginning to spread westward therefrom, English building was pursued in the well-known Elizabethan manner, and especially, perhaps, in those country mansions which we still hold in such high esteem. Even when the new fashion had taken complete possession, this old one was not entirely forgotten; and in 1753-70, for example, Horace Walpole was employing himself pedantically, if no more, in building at Strawberry-hill a sort of Mediæval retreat, eminently absurd, but equally suggestive. Then the French Revolution became the great historical landmark of the age. War between the new principles and the old, exhausting all other nations, left England alone in possession of what might be called unconquered feudalism. It was only natural at such a time that good old country gentlemen should build *Castles*; and, accordingly, through the whole period from 1770 even to 1830, under such architects as Wyatt, the now execrated restorer of cathedrals, Wilkins, of the National Gallery, and Nash, of Regent-street, sham fortresses, in the flimsiest imitation of the "baronial" manner, were built all over the country, in stone, or brick, or Roman cement, or lath and plaster, with wood painted for masonry, cast-iron painted for oak, and, in short, anything that came to hand painted to represent anything else that might be convenient, with such an exuberance of sham accessories of every kind as to be bewildering to the most patient of critics. But, in the meantime, John Britton had been perseveringly laying before the public admirable engravings of English antiquities (1805-35); and the appreciation of the picturesque and the veneration of the traditional combined to give a fixed direction to antiquarianism in favour of Mediæval lessons in design. Then came the great apostle of modern Gothic, Welby Pugin; truly a very remarkable man, possessed fanatically with the one great idea, whether ultimately for good or for evil he cared not. Before long he exhibited the precise effect of his enthusiasm in becoming one of the first of our "perverts," as the phrase goes; and the result of his whole life from its eccentric opening to its melancholy close,—every day of it the life of an indomitable genius,—was to fix irrevocably the revival of Mediæval art upon the assertion of Mediæval social principles,—ecclesiology, symbolism, sacerdotalism, ritualism. By this time, however, the mere fact of the Gothic revival had been accomplished; for after 1835 the new Houses of Parliament were brought under discussion as affording an opportunity for a signal assertion of baronialism; and, as all the world knew, Pugin was Sir Charles Barry's right hand in the design and development of that great example,—now a good deal carped at by those who forgot the fact that the fashion of its architecture was not the free choice of the architect, but rather the contrary, forced upon him by Parliamentary amateurs. Since that period, at any rate, all our churches had been of the Gothic style; and of late there had been colleges, schools, parsonages, and even convents, built all over the country in the same fashion, until at length secular and civil architecture was being claimed in its entire field for Gothic administration,—a condition of things which sooner or later must lead to something unexpectedly amazing. At the present moment, antiquarianism, in this fashionable form, was urging its most uncompromising maxims: severity of manner, muscular harshness, and intentional ugliness, being openly and expressly advocated by extremists every day, with at length the most minute reference to ancient models, not for principles or suggestions, or even for canons of style, but for copies, so that crude Norman, French, and Spanish turrets should be literally reproduced, in precisely the same way as the fastidious porticoes of Classicism less than half a century ago,—so turns the wheel!—were so slavishly, as the saying goes, and unintellectually accepted. Thus, then, stood "The Battle of the Styles," the inevitable effect of an antiquarian age which must inevitably run its course; and, in pursuance of the certainly remarkable uniformity of chronological periods exhibited by the scheme offered by the lecturer at the commencement of the course, he would venture to suggest that it seemed not at all unlikely that the termination of the current five hundred years, in about a century and a half from the present time, would prove the end of the antiquarian period, and the commencement of some novel development both of society and of art, in which existing actors must be content to have no part. But in the immediate form of the controversy as to style, the arguments might be stated thus:—Gothicists affirmed that their mode was "our national style;" but this was obviously fallacious, for it was not in England alone, nor in England even chiefly, that Mediæval architecture was produced, but in the whole of Mediæval Europe: it was simply the style of all Europe for a period,—one that had passed away. Then the rejoinder of the Classicists was this,—that their mode is Italian merely because modern Europe was cradled on Italian soil; that it is modern European, certainly not English peculiarly, but again the style of all Europe for a period,—one that has not yet passed away. Observing briefly that no revival of Gothic, in our sense of the term, had been found possible on the Continent, the lecturer remarked upon the exquisite

* See p. 980, *ante*.

elegance with which Classic architecture had been pursued in France; while, on the other hand, the highest possible praise seemed to him to be due to English architects, even those of inferior pretensions in some cases, for the great artistic success with which they were effecting the production of a constant succession of picturesque Gothic works. The particular form of this rivalry he considered to be most interesting and suggestive to the student, and most creditable to both countries, in the eye of the critic. As to the demand sometimes advanced that a new style should be expressly invented, he need only say that a style in art was not to be so produced, but only by the slow operation of natural laws, of which, in the present age, Italian-European, galvanized Gothic, and universal Antiquarian, were the inevitable products, for good or ill, and in spite of us. Then, if he were called upon to offer a prognostication of the future, he would accept the formula of Archbishop Manning, that there was but one alternation offered to modern intelligence, namely, that between faith and science; and, taking these terms in their most comprehensive sense, he could not help thinking that what was erroneously called faith must inevitably yield, while that which was more properly called science must inevitably prevail. New principles of society, philosophy, and art were every day being introduced, the current of debate was setting in one invariable direction; and if he were to suggest that in architecture the next period would be that of *science* as the successor of Antiquarianism, he might, perhaps fairly, so leave the question to its destiny.

FALL OF A RAILWAY STATION AT EDINBURGH.

SIR,—I have just read with much profit your article on the catastrophe at King's College. Will you allow me to bring under your notice a similar accident which has just occurred in Edinburgh (where I am at this moment residing), with the view of directing public attention to the scandalous want of supervision in all matters relating to building in this northern capital? You will probably remember that I addressed you on one or two former occasions of a like nature, particularly with regard to the fall of an ancient tenement in the High-street, and also after the severe storm of February, 1868, in which I made a very narrow escape from the fall of a chimney. Edinburgh is, no doubt, a pleasant place of residence; but the risk of life in it is very great from a number of causes, one of which is the constant occurrence of such accidents as I shall proceed to describe. I shall quote as much from the local reports as may make the narrative intelligible, interspersing a few observations of my own in the way of supplement. In the *Scotsman* of Friday, December 7th, appears the following startling announcement:—

"Yesterday evening, just after darkness had set in, people at the west end of the town were startled by a tremendous crash, caused by the unaccountable fall of the enormous wooden shed which was in course of construction on the Lothian-road for new station premises of the Caledonian Railway Company."

I dwell nearly two miles from the scene of the accident, and the report reached me like the firing of a battery of artillery:—

"The beams and timbers of the great shed were all down upon the ground in the utmost confusion, and large masses of timber were hanging over the retaining wall against St. Cuthbert's-lane, where they had been lodged, seeming as if they would come down any moment. It was deemed advisable to warn the public against going into the lane, which, indeed, was already partly blocked up by the material which had fallen into it."

St. Cuthbert's-lane here mentioned is the *locus* of the old poorhouse of that parish, which is now removed to the suburbs of the city, fortunately for the paupers. Part of the building plan provides for blocking up this lane, and the ground for the station has been otherwise obtained by an extensive and destructive clearance of valuable property, Dr. Candlish's Free Kirk among other things.

The site of the building (*i. e.* of the wooden erection) is the space which has been recently cleared between Rutland-street, Rutland-square, and the Lothian-road, with a prominent corner to Princes-street, where the principal entrance is exposed.

"The permanent way and platforms were to be covered with a shed constructed in two spans, one 32 ft. and the other 40 ft. wide, with a height of 28 ft., and it is this shed which has fallen. The erection measured about 450 ft. in length, and the platforms were to extend some 350 ft. beyond its lower end, thus attaining a total length of 800 ft. The roof of the shed was designed on the wrought-iron girder principle, provision being made for lighting in the shape of longitudinal glazed spaces on each side of the roof. The whole of the buildings were being constructed of wood, with the exception of some partition walls in the offices, where fireplaces and chimneys necessitated the introduction of brick. The walls between the pilasters were being formed of what is termed louvre boarding, the boards overlapping each other to the extent of an inch. The principal elevations, relieved with pilasters, cornices, and parapets, present, as we have said, a tolerably neat appearance, considering that they form part of what could only be considered a temporary structure."

Temporary as it is, however, this structure is to cost 10,000*l.*

Messrs. Blyth & Cunningham, engineers to the company, made the plans; and the contractors are the well-known firm of Messrs. William Beattie & Sons. The intention was that the station should be ready for occupation by the 1st of February next. It was commenced in the month of August. The work was advanced with a view to completion against that day, and the whole of the rough part of it would have been finished in about three weeks. Already a portion of the shed,—though only a small portion,—was slated, and part of the glass had been put in.

But on the evening already mentioned, viz., on the 6th day of December, the whole of this passenger-shed fell with a tremendous crash, shortly after the workmen, *to the number of about eighty*, had given over and left the ground.

"The building itself has been reduced to a sorry plight, the whole of the great passenger-shed having gone entirely to ruin. The front portion of the station with the offices contained therein, and the booking-houses, refreshment-rooms, and the carriage-shed or store forming the long line of boundary towards the Lothian road, are fortunately untouched; but nothing else is left, so that what is gone was no insignificant part of the building."

The *Scotsman* goes on to say that the cause of the accident in all probability was owing to some of the iron castings forming the junctions of the connecting rods giving way. Next morning, however, we have the *result of investigations* (it is not stated by whom), which is thus described:—

"There is now no doubt that the accident was caused by some flaw in the iron rods. The damage is found to be less considerable than was at first feared, as not more than a tenth of the dislodged material has been rendered useless. Some of the iron beams have been so twisted as to be made unserviceable, and a quantity of the timber and slates is destroyed. Early yesterday morning, 100 men from Carstairs and elsewhere were set to work to clear away the material, and this operation, it is expected, will be completed to-day; so that the reconstruction of the shed will be proceeded with on Thursday. A peculiar circumstance is, that the glass for the whole shedding was stored within the building at the time of the catastrophe, and that none of it is broken, a heavy beam having fallen in such way as to protect the crates."

And so ends our local authority in the report of this most serious accident.

Now, sir, permit me to say one word in further explanation. I believe the cause of the accident was neither due to the iron castings, which gave way, no doubt, as cast iron always does upon a strain being applied, nor to the timber-work of the superstructure, which appears to me to be as soundly done as such temporary timber-work can be, but to the deplorably unsatisfactory character of *the foundation*. The whole thing is built—not upon sand, but upon genuine and unmistakable rubbish,—the *débris*, in fact, of the demolished buildings, combined with the aggregation of innumerable "tooms," as they call a cartload of rubbish when it is deposited in Scotland. It is true that the foundations were partially piled; but those who know anything about driving piles will know how to estimate this precaution at its proper value.

But I will not encroach further on your space at present. Supposing my view of the case correct, I should like to inquire who is to blame? In my opinion, the whole responsibility and the entire odium of the matter properly belong to a wretched remnant of municipal antiquity we have in Edinburgh, which goes under the name of the Dean of Guild Court. This respectable institution—which is chiefly composed of grocers and cheesemongers—is supposed to fulfil the functions of the district surveyors in London. But you will judge with what success. I have already compared it in your columns to the Court of Arches; and the Lord Dean of Guild to the man-at-arms in the Lord Mayor's Show. Having by a seal of cause, or some such antiquated instrument, a sort of legal existence and a corporate constitution, it has no personal responsibility,—*i.e.*, it has neither a body to be kicked nor a soul to be saved. Why the citizens of modern Athens submit to have their lives and property at its mercy is one of those curious social paradoxes of which Scotland is so fruitful and so conservative, and concerning which I may take some future opportunity of enlightening your readers.

In the meantime I hope you will assist in enforcing the true cause of these building accidents in Edinburgh.

AN OBSERVER.

THE CHANNEL PASSAGE.

MR. ZERAH COLBURN, C.E., has read a paper on this subject at the Society of Arts, in which, after describing "an improved means for laying a tunnel for the transit of passengers across the Channel," he says, in conclusion,—

"It has been mainly the object of the present paper, however, to examine into the engineering merits of the various schemes proposed for crossing the Channel, and the writer cannot close without expressing the belief that the balance of certainty, economy, and, all things considered, the safety and even the comfort of the travelling public, remains with a large and suitably organised Channel ferry service."

The plan described by Mr. Colburn consists of an iron tube to be laid at the bottom of the Channel, which could be laid in two or three years, at a cost of six millions sterling.

"It is not to be lost sight of," he remarks, "however remote the bearing of the question upon the present subject may appear to be, that a sudden demand, within a couple of years, for half a million tons of cast-iron, not for export, and not for immediately productive employment at home, would most certainly inflate the iron trade, and indirectly affect nearly every branch of our industry. . . . The very home demand, whereby we would be literally throwing our iron, and with it our money, into the sea, to no immediate profit, would give to other nations an advantage of which they would not be slow to avail themselves. . . . The sudden abstraction of such a quantity for a single work, having no immediate prospect of success, might be attended with consequences which the whole country would long have occasion to deplore."

We may here add that Messrs. Ward, Hunt, Fowler, and Abernethy have had an audience of the French Emperor, to explain to him their plan for the passage of the Channel by large ferry-ships. The project is particularly recommended by the small sum of money and short time required to carry it out, as compared with the schemes for bridges and tunnels of doubtful possible realisation, and of the ultimate time and cost of which it seems scarcely possible to form a reliable estimate. Not only would passengers and their luggage gain a couple of hours by the proposed ferry between Paris and London, but heavy goods trains would be enabled to take their course through France and England without the expense and considerable delay caused by transhipment.

THE ROYAL ACADEMY.

THE prizes presented to the students on Friday evening, the 10th inst., in the new rooms of the Royal Academy, included:—

For the best design in architecture; the subject, a design for a theatre—the gold medal, books, and a scholarship of 25*l.* to Henry L. Florence.

For the best architectural drawing of the garden front of Bridgewater House—the silver medal and books to Merton M. Glover.

For the second best architectural drawing—the silver medal to George Stanley Rees.

The one year travelling studentship in architecture, to Henry L. Florence.

The President, Sir Francis Grant, in his address, said the first attempt to establish a College of Science and Art was made during the reign and under the auspices of Charles I., but the civil strife which soon followed put an end to this institution. Charles I. was an enlightened patron of art, and the President naturally deplored the loss to the nation of the art treasures which the king had accumulated, and which were sold and dispersed during the Commonwealth. According to Walpole, art was expelled along with the Royal family; but it languished in the reign of Charles II., and was almost a blank in the reigns of James II. and William and Mary. After various attempts to establish an Academy of Art by Sir Godfrey Kneller, John Evelyn, Sir J. Thornhill, and afterwards by the Dilettante Society, an important epoch in the history of art was reached when Hogarth, with eighteen other artists, agreed to adorn the walls of the Foundling Hospital with paintings. These, being publicly exhibited, proved a source of great attraction, and first suggested to British artists the idea of holding an annual exhibition of their works. It was in 1760 that the first exhibition was held in London, and it had a great success. Then came the establishment of the Incorporated Society of Artists of Great Britain, but strife and contention among its members led to its disruption, and it was followed by the founding of the Royal Academy, with George III. for its patron, and Sir Joshua Reynolds its first president. Referring to the periodical attacks made on the Academy, the President spoke of the attention paid by members of the Academy to the teaching of the pupils. Men, he said, who had gained a European reputation, and

whose names would reflect honour on their country in coming ages, became under this system painstaking instructors of the youthful student. "Do we hear of such disinterested zeal," asked Sir Francis, "in any other profession? Do judges, or men of science, or skilful physicians devote their time gratuitously to the education of the young?" Such has been the practice of members of this Academy, and how small has been the acknowledgment of its services?"

The impression abroad has been, that the professors, keeper, hangers, librarian, secretary, &c., received, and rightly, very respectable fees for their services in assisting the students. Was this impression wrong?

The President further said that the members of the Academy are now actively engaged in the improvement of their schools, and will spare no labour or expense to make them, if possible, the first in Europe. Measures, he said, would shortly be adopted in order to attain this all-important end; and he dwelt on the necessity of retaining the system of visitors, which conduced to originality and freshness among the students, while insuring for them a friendly sympathy among the masters of the art, and stimulating their best energies.

At a full meeting of the members, held on Wednesday evening last, Mr. James Sant was elected as an Academician. The following honorary foreign members were elected:—Messrs. Gallait, painter; Guillaume, sculptor; Viollet le Duc, architect; Henriquet Dupont, engraver; Meissonier, painter; and Gerome, painter.

PRINTS AND THEIR PRODUCTION.

Under this heading Mr. S. T. Davenport, of the Society of Arts, read there, on the 8th, a very instructive paper on the processes of engraving, wood engraving, colour printing, lithography, surface blocks, photography, photogalvanography, and other methods of producing prints, which he illustrated with a large and interesting collection of engravings and photographs, that will be open to the inspection of members and their friends till the end of this week.

Mr. Davenport, in accounting for his enthusiasm on the subject, said:—"I may perhaps be open to the charge of attaching more importance to reproductive art than the subject merits. But, if so, the fact is easily accounted for. My boyhood and early youth were spent amidst engravings—for many of you are probably familiar with the works of my late father, who was a contemporary of Finden, Heath, Le Keux, and other eminent engravers. Many of his productions are before the meeting. I was myself educated for the same profession, and before I became an officer of this Society (now more than twenty-five years ago) I practised the art for some time. Indeed, I may mention that I was one of the first to produce, by electro-deposition, copper-plates from engraved steel-plates. These facts must plead my justification for what I have said; and it will appear not unnatural that I should continue to take a warm interest in every new process that may promise to give greater facilities to reproductive art, and thus to increase the means of affording one of the purest and best sources of gratification, not only to the rich, but to the people at large."

NEW CO-OPERATIVE STORES AND PUBLIC HALL AT RAWTENSTALL.

The Rawtenstall Industrial Co-operative Society have inaugurated their new stores by a *soirée*. The society commenced short of twenty years ago with a capital of one guinea, and it now possesses a capital of 30,000*l*., and gains profits at the rate of 4,000*l*. per annum. Larger premises were secured as their business increased, but for some years they found that they were out-growing the premises they still occupy, in Lord-street. Resolved on building new stores, a suitable site was found in Blackburn-road, which forms the principal street in the town, and which is also central. Application was then made to eight architects to submit designs in competition for the proposed erection, two premiums being offered, in addition to the premium for carrying out the work. When the designs were sent in, the two best were found to be by Messrs. Maxwell and Tuke, of Bury, to whom the two premiums were therefore awarded; they, however, consented to forego the second premium, which was divided as an honorarium amongst the unsuccessful competitors.

One part of the premises consists of stores and shops for the grocer, draper, tailor, shoemaker and clogger, butcher, &c. Another portion of the premises comprises a news-room and library, club-room, large assembly-room 90 ft. long and 55 ft. wide, &c. The description of the exterior of the building may be summed up in a few words. The instructions to the architects were to spare nothing in construction, but economise in ornament; and the result is a large and strong but not an elaborate building. The walls are faced with parpoints, with Longridge stone-dressings, nearly 7,000 cubic feet of which have been used. The cost of the whole work, including heating, painting, fittings, &c., will be a little under 7,000*l*., the principal part of which has been done by Mr. Roberts, of Rawtenstall.

BARKING REPORT.

Mr. Robert Rawlinson, the Government engineer appointed to inquire into the complaints of inhabitants of Barking, with reference to the outfall of the metropolitan sewage, has made his report, and it is now with the Home Secretary. We are able to say that Mr. Rawlinson considers the allegations to be not proved; that he considers the cesspools and general want of drainage in the town of Barking to be more prejudicial to the health of that town than the proximity of the outfall of the sewage of London; and that there has been no diminution of water by silting in the main channel of the Thames consequent upon the outpouring of the sewage. We further understand that the Government engineer reviews the reports of the Metropolitan Board of Works, pointing to the fact that while they have protested against the fouling of the Thames above London, they themselves continue to pour into it the sewage of the London population. It appears that the question of the utilisation of sewage was not referred to Mr. Rawlinson, but he expresses an opinion to the effect that to accomplish this the Board must either subsidise or guarantee any company undertaking the work, or carry it out themselves. Experienced engineers have stated that the cost of taking the sewage to Sea Reach would have greatly exceeded the total cost of the metropolitan system of main drainage as executed, and that the area requisite to utilise the sewage would not be less than 70,000 acres. It appears in the evidence attached to the report that as compared with guano at 11*l*. a ton, the chemists' annual value of the London sewage is not less than 1,000,000*l*.

"A NEW STYLE."*

"Art is long, and time is fleeting," says the poet. That time is fleeting seems to be pretty well understood by the present generation, but that art is long, is understood by few indeed. We are in a hurry with everything nowadays, in haste to be at the end by the shortest possible road; but there is no short road to art, it cannot be reached by driving a straight line through hill, and o'er valley. It can only be got at by wandering, by devious paths, and gathering flowers by the wayside.

The young man just come of age, who has hurriedly passed through the routine of an architect's office, does not hesitate at attempting to design a large and important building in as many days as it required months of the anxious thought and care of the great men of old to accomplish a like object. Nothing great in art has ever been done in haste: read the lives of the sons of genius, and you will find them, one and all, great workers, striving towards perfection. But even those amongst us who know the necessity of care and deliberation in the maturing of a design are forced, by the ignorance of the general public, into the vortex. Your building committee only gives a week or two in which to design the most important building in a city; nay, more, they must also have an estimate of the cost and other particulars; and great is their indignation against the profession if everything does not tally to a tittle. So, too, with the private client who has for years been deliberating upon building a new mansion: the design must be produced forthwith, hundreds of artificers are set to work, and the plaster is not dry before he hastens to enter into occupation; he, too, is indignant when he finds the work badly finished and unstable; but greater is the harm done to art by the crudity of the design.

We are in haste, too, to create a new style! Who is to do it? Who ever did it? Turn we to the past, and we find that a new style was the slow growth of centuries, fostered by the circumstances and peculiarities of the times. Why the architectural profession, more than any other, should be subjected to the parrot cry of copyism is more than I can comprehend. It appears to me that there is as much ability and originality displayed by some of its professors, as is done by any of the *literati* who decry them. Architects are moulded in the fashion of the times just as are men of letters, and when the general public show as deep an interest in the production of fine architectural works as they do in the publication of books, men fit and able to meet their requirements will surely be found. Do the people of this country exhibit any love for our art? Do our legislators, as representing the people, give encouragement in promoting public buildings worthy of the richest and greatest of modern nations? With what prodigality are iron-clads constructed that are unseaworthy! what niggardliness is exhibited when a building that might be "a joy for ever," is in question.

In tracing the history of any nation, it becomes apparent that its literature and art act and react upon each other; there is a distinct sympathy between them. Compare the literature of Greece, with its architecture, and you find the qualities of the one those of the other,—proportion, symmetry, and harmony. The grandest structures of Rome are but a petrified echo of the orations which resounded in their halls. So was it in the republics of Italy; and so is it, too, in the Britain of to-day. A few of our architects translate the poems in stone of ancient Greece and Rome into the vernacular; the style of others is influenced by that of the homes of Dante, Petrarch, and Boccaccio; and many give the legends in stone of the Middle Ages a modern significance. The designs for the new Courts of Law, which were the occasion of a new outburst of the cry, were no more copies than were the "Idylls of the King." And such works as the Strand Music Hall, and the Alhambra, in Leicester-square, find their prototypes in "East Lynn," and "Lady Audley's Secret."* And many works there are issuing from the press that will not outlive the structures that spring into existence with them.

Our sculptors and painters, too, are engaged *more majorum*. Venus and Cupid, Nymph and Satyr, are year by year produced in marble; and knights in armour and gallants in doublet and trunk hose figure in every exhibition of pictures. Pre-Raffaellitism has had its day, and the Classical style is now coming into fashion.

The artist must be in sympathy with the spirit of the hour if the seal of genius is to be set upon his work: he will come in a manner unlooked for, his advent may be nearer than we suspect, the indications of the agenda are faintly apparent even now, I think.

To the furtherance of this desired end one thing is absolutely necessary, and that is, that our architects boldly face the exigencies of modern requirements. It will not do, for example, to assert, as I have heard done, that a church must not have galleries; if such are an indispensable condition, the object of a true artist should be to make that adjunct part of his design, combining the whole into a harmonious work. That an interior, sacred or secular, is more dignified without being so incumbered, is certainly the case; but that one possessing this feature is necessarily devoid of that quality, I emphatically deny.

The study of Greek art is the prelude to the attainment of symmetry and proportion; that of Gothic to freedom, variety, and lofty aspiration. The combination of these would lead to the production of a work of high art. Power restrained within due limits by the exercise of reason and judgment contains the elements of the sublime. Weakness is ever apparent where there is no restraint; but it is not by mere plodding by confining yourselves merely to the work before you, that you will succeed; by so doing the mind is sure to become cramped and narrowed, and so the capacity to design enfeebled. There

* From a paper read by Mr. W. G. Shiells before the Edinburgh Architectural Association on the 8 h inst.

* Miss Braddon, in one of her novels, makes the hero, after coming into possession of a large estate, build "a *beautiful stuccoed villa*," in place of a Tudor mansion destroyed by fire.

is a time for everything, and however busy you may be, a portion of your time should be devoted to literature and science, poetry and music. The man who knows nothing beyond his own profession can scarcely be great in that; but the main object should be kept steadily in the foreground,—the attainment of proficiency in your own particular art.

The successful architect, then, must be a man of cultivated mind; possessed of a vivid imagination, he must be able to conceive, in his mind's eye, how his work will appear when completed, how it will look as seen from different points of view in combination with surrounding objects; for it is a great mistake to suppose that a design, excellent in itself, is suited for every situation. Obvious as this may appear, it is the cause of the poor effect produced by many works of merit; and I know of few cities, the architectural effect of which would not be enhanced by the transposition of some of the buildings in them. Of one thing be assured, if your heart is not in your work, failure is certain; if you do not take delight in your profession give it up ere it be too late. Art is a jealous mistress, and unless you are devoted to her she will reject you.

What has been done, then, to forward the desired result? Is the prospect all bleak? Is there no "silver lining to the cloud?"—No gleam of sunshine to enliven the scene?

There is, doubtless, a large crop of rank rubbish sprung up, but it may serve as fuel wherewith to light us on the way. That we have produced any work of high art in a new style can hardly be affirmed, but it cannot be denied that great mastery over the old styles has been shown by not a few; and we can point to structures which, had they been erected a few centuries ago, would have been looked upon by us as masterpieces. If so, is not this so much accomplished? Compare some of our best works with the cream of those erected at the beginning of this century, and I think it will be seen that some progress has been made. By and by, when every ancient style has been thoroughly mastered, we may look for something new springing up; a thorough knowledge of what has been done is the necessary prelude of what is to do. We must begin with the lesser and gradually proceed towards the greater, ever keeping the highest object in sight, so that each step may be one in the progress to perfection.

Strive on, then, drinking freely as you go from the pure fountain of Nature, wherein the excellence of beauty is ever reflected,—

> "A thing of beauty is a joy for ever."

The influence of the masterpieces of Greek art is felt to this day, and will continue to be felt so long as the human race exists; the more remote the period the more difficult will it be to trace that influence; but still it will be there, and so will it be with every true and noble work of art. Here, then, is an incentive to earnest work: the creations of the brain live for ever: the immortality of the soul is no myth.

Art is the aim at perfection, and a work of high art comes nearer to perfection than any other work of man; in it we can tolerate nothing false or mean, "the beautiful includes the good and the true." A new style, if new style there is to be, must be built upon the foundation of both, and the most hopeful sign of the times is the hatred of shams entertained by every real student of art.

Now it is alleged by your commonplace unimaginative individuals (*practical* they call themselves) that art is destructive to usefulness. The reverse is the case; the most beautifully formed object is ever the most useful,—

> "It is no part in prudence to decry an art,
> And what it may perform deny,
> Because you understand not why."

These people mistake a superabundance of ornament for art, and do not seem to be aware that many things "when unadorned are adorned the most;" that simplicity is the greatest beauty. This lavish use of ornament is one of the phases of the hour which tend to retard the progress towards the attainment of a new style. If we trace the development of any existing style it will be found that at first ornament was sparingly used, and that in its decadence quantity, rather than quality, is the characteristic of the detail.

"Art is long," there is hope in the future: what is good lives, that which is bad dies; the good which we do will exercise its influence on the art that is to come, the harm will be overcome and set aside. It is a grave error to measure the progress of art by years only; centuries are requisite for its development, and it is only by taking a broad and comprehensive view of it that a true estimate can be arrived at.

It would require more time than I have at my disposal to make clear what is the true meaning of the phrase "a new style." So gradual is the transition from one style to another that you cannot fix a hard and fast line where one ends and another begins. A language has never sprung into existence at once; but as new ideas, new inventions, and discoveries have appeared, it has gradually developed. And so in architecture, "the language of stones;" as new materials have come into use, and new requirements have arisen, new phases and combinations have produced new styles. It is impossible, therefore, I maintain, for any one to create a new style, but it does not follow that an individual may not lend powerful aid towards its formation; there is abundant scope for each and every one of you to exhibit the latest power that is in him.

If I may venture to give a simple hint, I would say that after having acquired a thorough knowledge of the old styles, then throw all books of reference aside, and with plain paper only before you, and pencil in hand, draw a design of the building wanted, with nothing but what is absolutely necessary in its construction; then look to its proportion, and finally to its ornamentation. The result will, doubtless, in most instances, be that the designer will fall into the old rut; but in some few instances a new light may dawn upon the artist. At all events, if the building is structurally true, it will not be altogether contemptible. A plain harsh truth is better than an eloquently-expressed falsehood.

In art, as in politics, there is a party of progress and one that desires no change, of those who strive to create a better state of things, and of those who revere the part and maintain the perfectness of the works of our ancestors. The goal reached by one generation is that from which the next starts; but in running the race it is sometimes advantageous to retrace our steps, for a space, in order to acquire the impetus necessary to surmount an obstacle. This is what we have been doing. Has it been a leap in the dark? For my part, I think we are at the starting-point of a new style.

> "There is a history in all men's lives,
> Figuring the nature of the times diseased,
> The which observed, a man may prophesy,
> With a near aim, the main chance of things
> As yet to come to life; which in their seeds
> And weak beginnings lie intreasured."

INVERNESS CATHEDRAL.

THE foundation-stone of this building was laid on the 17th of October, 1866, by the late Archbishop of Canterbury, Dr. Longley, in the presence of five of the Scottish bishops, the Bishop of North Carolina, and about 60 clergymen of the Scottish Episcopal Church. From that time till September of the present year the works were prosecuted vigorously, and were then so far advanced as to permit opening for service. At the ceremony were present the Bishop of Winchester, then Bishop of Oxford; the Bishop of Rochester; and a large number of clergy, both of the English and Scottish Churches.

The work, except the altar, reredos, candelabra, and windows, has been entirely executed by Inverness workmen; and the effect of the cathedral, which stands near the river, is, from whatever point of view, very effective.

The building is in the Decorated Gothic style, and has been erected from the designs and under the superintendence of Mr. Alexander Ross, architect, Inverness. The cathedral is built of a pink freestone from Conon quarry, and the dressings are of a warm cream-tinted stone from Covesea Quarry, in Morayshire. The slates are the Westmoreland green, and were selected to harmonize with the quiet warm tone of the walls. The following are the external dimensions:—166 ft. long by 72 ft. across the west front; the height of the towers is 100 ft.; and the architect's design shows a further elevation of 100 ft. by the erection of spires on the towers. The height to the ridge of the roof is 88 ft. The transepts are arranged after the old Scottish model, to project only slightly beyond the aisles. Viewed from the outside, the building shows a nave, with aisles, transepts, and apsidal chancel of equal height. The chapter-house, of an octagonal shape, is situated at the north-east angle, and at the west end are the towers, carried up to the springing of spires. It is to be regretted that funds are wanting for the erection of these spires, which are required to finish the external design of the building, and harmonize the whole structure. At the base of the north tower there is a side entrance, and the main entrance is situated between the towers, facing Ardross-street. It is formed of a deeply-recessed archway, in a wall upwards of 8 ft. thick, and is approached by a flight of steps. The sides are formed of a series of shafts with carved capitals, resting on a dado of rich panelling, and the archway is enriched with five courses of beautifully-carved foliage. A pointed gable rises over this to a height of 35 ft., ornamented with perforated tracery. The doorway is divided by a pier into two openings, and in front of the centre is a column of Peterhead granite, intended to carry a life-size figure of St. Andrew, the patron saint of the cathedral.

Proceeding into the interior by this entrance we find ourselves in a porch, formed by a handsome stone screen fitted with plate glass, and through which the whole extent of the building can be seen.

Passing through the screen, we come into the nave, which consists of five bays, the western one being flanked by the towers. These bays are divided by monolithic columns of Peterhead red granite, 7 ft. 9 in. high by 2 ft. 4 in. diameter, surmounted by foliated capitals of freestone, from which spring the nave arches. Over these run the clearstory windows, consisting of triplet windows, with stone rear arches resting on detached columns with carved capitals. There are twelve lights on each side, with traceried heads, forming, with the columns referred to, a very effective arcading along the upper story of the nave. The transepts are carried, both externally and internally, the full height of the nave, and the interior stone arches, where they intersect the nave, choir, and transepts, are carried up on clustered columns the full height of the roof, viz., 58 ft., a novel feature in timber roofs, but which has a most satisfactory effect, by giving dignity to the choir, and continuing the line of the nave roof to the end of the chancel.

The choir is raised two steps above the nave, and is divided from it by a low ornamental stone parapet. The chancel rises six steps to the sacrarium, in flights of three steps, and two more to the altar, giving the latter a total rise of ten steps from the floor of the nave.

The building is lighted by three five-light traceried windows, measuring 16 ft. by about 30 ft. each, at the ends of the nave and transepts; and further, by double-light traceried windows in each bay of the nave; by triplet in clearstory; by three double-light traceried windows in the apse of the chancel; and by two wheel windows in the ends of the aisles.

The roof of the building is composed of an outer roof to carry the slating, and an inner of varnished red pine, coved and divided by principal couples and ribs over each column into bays, each bay being divided into panels. It is designed for coloured decorations; but in the mean time it is simply varnished, with stencilled patterns on each panel, to relieve the plain timber.

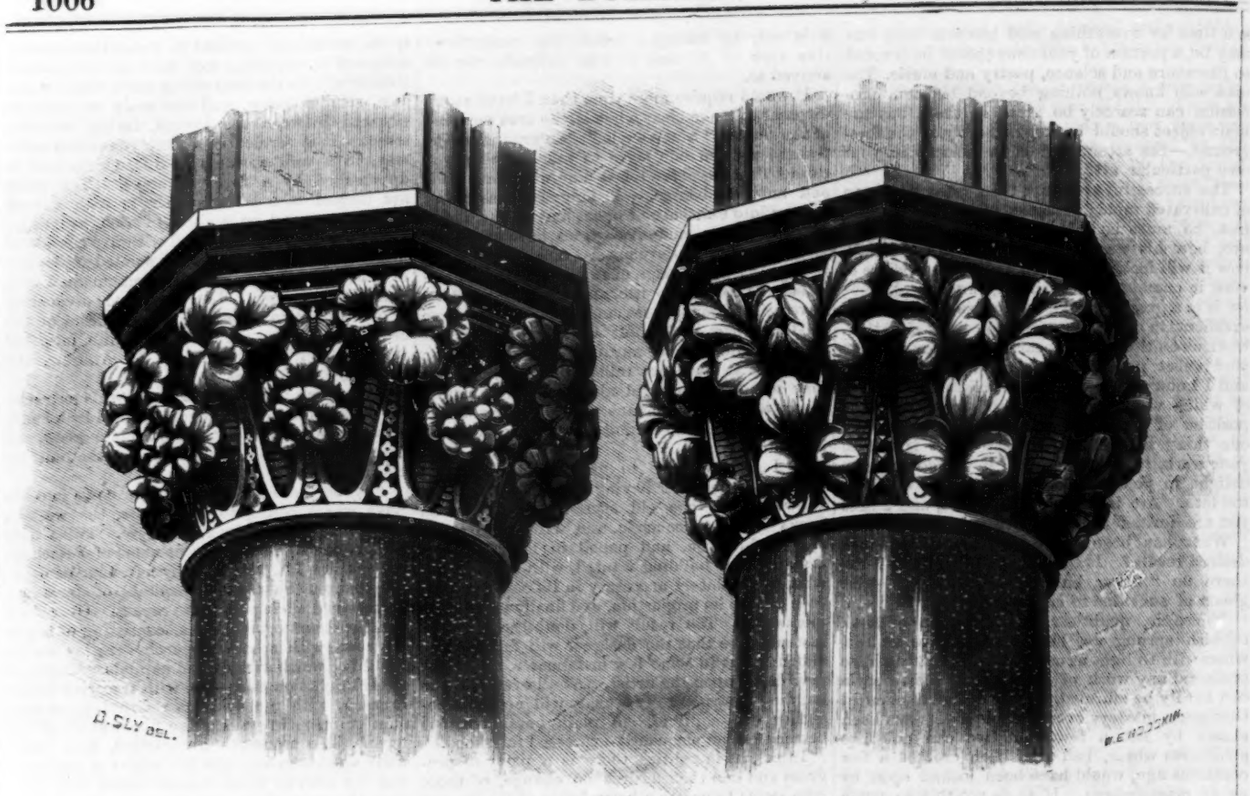
The nave will accommodate about 800, and the north transept 90; the seating throughout being of pitch pine, varnished.

The flooring throughout, except immediately under the seats, is of Minton's tiles. Those in the chancel and sacrarium are extremely rich, being laid in panels, each containing a Scriptural representation.

The heating of the building is by hot-water pipes, passing round the building under the passage floors. Advantage was taken of the space underneath the building to form tunnels, and into these the gas and water pipes are introduced. These tunnels are sufficiently large to allow a man to pass along; so that access can be had for repair to all the pipes without disturbing the tiles of the flooring.

The lighting is entirely by standards, placed at the side of the aisle passages, and between the piers of nave; the chancel being lighted by very good standards of solid brass. These, as well as the gas-fittings of the nave, are supplied by Hart & Son, of London.

In the contemplated event of the windows being filled with stained glass, as memorials, a design was prepared which should illustrate, on the one side, the early life of our Lord up to the period of his Baptism, and on the other his Acts of Mercy, reserving the windows at the east end for illustrations of the Passion, and the three large windows for illustrations of "The Ascension," "The Descent of the Holy Ghost," and "Our Lord in Glory." With the exception of these last, every window—except those in



CAPITALS OF THE NAVE, ST. ANDREW'S CATHEDRAL, INVERNESS.

the chapter-house, vestry, and clearstory—has already been secured by different parties, and the design will be fully carried out. Ten are already in the cathedral, while the others are in course of execution, and will be completed before the end of the year. The preparation of the glass was entrusted to Messrs. Hardman & Co., of Birmingham; and, so far as executed, the windows fully sustain their credit.

The outlay on the building up to the present time, including gifts of furniture and fittings, amounts to 18,000*l*.

The special gifts are very numerous. The pulpit is a costly work of art, composed chiefly of Caen stone and green marble. It is a gift from Mr. Fountaine Walker, of Foyers; is from a design by Mr. Ross; and has been entirely executed by Messrs. D. & A. Davidson, of Inverness. The pulpit rests on short columns of Abriachan granite, is trefoil in plan, and on the panels are carved three bas-reliefs. The first is a representation of "St. John preaching in the Wilderness:" the centre shows the figure of Christ as "The Good Shepherd," and the third "St. Andrew preaching from his Cross." The subjects are separated by columns of green marble, and between these are figures of angels,—the one holding a palm branch, the emblem of victory; the other, a lily, the emblem of purity. The cope is formed of green marble.

The altar is the gift of the Primus, and Mr. Fletcher, of Rosehaugh, gives the reredos. The front of the altar is formed by trefoil arches, supported on serpentine marble shafts, the panels between the columns being of alabaster; the centre one containing a cross of pure white alabaster, set with crystals. Those on the right and left contain the "Lamb of God," and "The Pelican" respectively. The spandrels are relieved by crystals of Derbyshire spar. The top of the altar is formed of a single slab of Caen stone, with incised crosses at each angle, and also in the centre. The super-altar is composed of rich alabaster slabs. The reredos is formed of Caen stone, and rises a height of 17 ft. 6 in. The lower portion, forming the altar background, consists of rich incised diaper work. Above rise three arches, enclosing panels, containing a subject in alto-relievo in each,—in the centre, "The Crucifixion," and on either side "The Agony" and "The Resurrection." Purbeck marble columns support these arches. Over the centre panels rises a richly-carved and crocketed gable terminating in a cross, flanked by buttresses, resting on spiral columns of white alabaster, jewelled. These buttresses run up into carved pinnacles, and are surmounted by the figure of an angel. The sacred vessels for the Holy Eucharist, the handsome candlesticks, and the other altar furnishings are the gift of Miss Charlotte Temple, Aberlour. They consist of the flagon and ewer, of ruby glass, set in silver, gilt; the chalice of solid silver, gilt, and studded with pearls and carbuncles; two patens, both of solid silver, one gilt; the brass alms-dish; polished brass candlesticks, studded with crystals and carbuncles; polished brass cross, set with carbuncles; two flower-vases, beautifully painted; and a double set of the necessary linen. The altar-desk is of solid brass, and has been presented by Miss Macpherson, of Glentruim. The recesses for the sedilia, piscina, and credence have only been temporarily fitted up. The altar-rails and sanctuary standard lights are of solid brass, given by Mrs. Perry, Devon Cottage, Inverness. They are very fine specimens of work. There are twenty-five lights on each standard, the ornamental foliage being of beaten brass, set with crystals and carbuncles.

On the south side of the entrance to the choir is the lectern, a very fair specimen of brass work, the gift of the Rev. G. S. Simcockes. The litany-desk is made of solid British oak, massively framed, and carved, with pillars and capitals. The panels contain various devices. It is the gift of the Misses Shilletto, Inverness. The bishop's throne—the gift of Mrs. Campbell, Devon Cottage—is placed at the south-east angle of the choir. The form of the cathedra or chair has been adhered to, with an attached prayer-desk in front. It is made of solid oak, moulded and carved. The back is 7 ft. high, and finished with figures of angels on each post. In the centre of the back on a shield are placed the arms of the Bishop of Moray and Ross, surmounted by a mitre. The prayer-desks for the officiating clergy are placed next the nave, and the Provost's stall is at the north-east angle. There are besides twenty-two stalls for clergymen, and twenty-two seats for choristers.

The organ, the gift of Miss Macpherson-Grant of Aberlour, has been made by Messrs. Hill & Son, of London, under the superintendence of Professor Oakeley. It is placed in the south transept, and contains the following stops:—

GREAT ORGAN—CC TO G.

	Feet.		Feet.
1. Bourdon	16	6. Wald Flute	4
2. Open Diapason	8	7. Twelfth	3
3. Cone Gamba	8	8. Fifteenth	2
4. Stopped Diapason	8	9. Mixture, 3 ranks	1½
5. Principal	4	10. Trumpet	8

SWELL ORGAN—CC TO G.

1. Bourdon and Double Open	16	5. Mixture, 3 ranks	0
2. Open Diapason	8	6. Cornopean	8
3. Stopped Diapason	8	7. Oboe	8
4. Principal	4	8. Vox Humana	8

CHOIR ORGAN—CC TO G.

1. Dulciana	8	4. Suabe Flute	4
2. Gedact	8	5. Clarionet	8
3. Gemshorn	4		

PEDAL ORGAN—CCC TO E.

1. Open Diapason	16	3. Violone	8
2. Bourdon	16		

COUPLERS.

1. Swell to Great Organ.	3. Great to Pedal.
2. Swell to Pedal.	4. Choir to Pedal.

Three Composition Pedals to Great Organ, two Composition Pedals to Swell, Tremulent on Swell.

It is contemplated to place a peal of eight bells in the north tower. The tenor, of 20 cwt., is the only one as yet hung. The estimated cost of the peal is 800*l*.

Mr. William B. Mackintosh was clerk of the works. The various contractors were:—Mason, Mr. Andrew Fraser; carpenter, Mr. G. B. Mackintosh; plumber, Mr. Simon Mackenzie; slater, Mr. John Russell; plasterer, Mr. Allan Mackintosh; painter and glazier, Mr. Donald Macdonald; stone-carving, Messrs. D. & A. Davidson, all of Inverness: the reredos, Mr. Earp, of London; standard and altar rails, Messrs. Hart, Son, Peard, & Co.; tiles, Messrs. Minton, laid by Mr. Hawley, of Edinburgh; heating, the Inverness Iron Company; stained glass, Messrs. Hardman & Co., of Birmingham: clearstory glass, Messrs. Powell; bells, Messrs. Warner & Son; organ, Messrs. Hill & Son, all of London: bishop's throne, Mr. Andrew Fraser; litany desk, Mr. Ritson, both of Inverness.

Much remains yet to do; but, from the want of funds, the committee are obliged to pause for the present. The completion of the spires is estimated to cost 1,600*l*.; enclosing walls and entrance gates, 300*l*., besides sedilia, font cover, interior painting and decorations, &c.

We give a view of the building from the Castle-hill, and a representation of two of the capitals of the nave. In our last issue we published the ground-plan.

ST. ANDREW'S CATHEDRAL CHURCH, INVERNESS.—Mr. Alexander Ross, Architect.

THE WORKMEN'S INTERNATIONAL EXHIBITION, 1870.

WE have received a letter from the honorary secretaries of this Exhibition, Messrs. Auberon Herbert, Thomas Paterson, and J. W. Probyn, in which they say:—

"The Council of the Workmen's International Exhibition, to be opened on the 7th of July, 1870, at the Agricultural Hall, Islington, has determined to hold a conference of delegates from the towns of the United Kingdom, and of other countries, on the 10th of January next, at the rooms of the Society of Arts (in John-street, Adelphi), which have kindly been lent for that occasion."

The subjects to be considered will relate to the method of arrangement of this Exhibition; the system of prizes, and appointment of jurors; the opening of workshops in the Exhibition; suggestions, &c., from local committees; and the means to be adopted to make the Exhibition promote the interests of technical education.

Mr. Mundella, M.P., and Mr. S. Morley, M.P., will successively occupy the chair during the day's sitting.

The following among other resolutions will be moved:—

"That the principles laid down in the prospectus of the Workmen's International Exhibition of 1870, which require the worker's name to be attached to the article produced, are both just and useful; as tending to give workmen their share in the credit of production, and to increase the pride and interest which attach to skilled labour.

"That it is of the highest importance to develope amongst all the people a true perception of what is beautiful in colour and form, and a scientific knowledge of the machinery and material employed in existing industries."

The Council will provide accommodation for the night of the 10th of January for those delegates who wish them to do so, and will otherwise do all in their power to facilitate the attendance of their visitors, on receiving communications on the subject.

WIDENING LONDON BRIDGE.

THE Common Council have given permission to Messrs. Farren & Featherstonhaugh to submit designs for widening London Bridge to 88 ft. Their proposition is to sink caissons to low-water mark, the width of the present piers, in front of the end of every pier, and as close to their cutwaters as the foundations will allow: to fill these with concrete and brickwork in cement in the usual way, and connect the new work with the old at Trinity low-water mark spring tides; and to erect upon these foundations piers and cutwaters faced with granite ashlar, in courses exactly corresponding to those in the existing piers, so that when complete the piers would present a perfectly uniform appearance, but would be 40 ft. longer than at present, 20 ft. having been added at each end. These piers would carry iron girders corresponding in form with the arches of the present bridge; one of these girders would be placed close against the face of each of the existing arches, altogether concealing the masonry faces of the present arches. Upon the girders supported by the piers a superstructure would be formed carrying the footpaths, parapets, lamps, recesses, or pedestals for statues, &c. So that if the bridge were altered as suggested, it would appear as a granite and iron bridge with five arches, retaining its present shape, approaches, and levels. The estimated cost is put at 80,000*l*.

NORTHERN ARCHITECTURAL ASSOCIATION.

AT the last meeting, on the 10th inst., Mr. F. Charlton in the chair, the following officers were elected:—President, Mr. A. M. Dunn; vice-president, Mr. R. J. Johnson; honorary treasurer, Mr. F. Charlton; honorary secretary, Mr. Thomas Oliver; honorary solicitor, Mr. G. W. Hodge; committee, Mr. J. E. Watson, Mr. C. H. Fowler, Mr. J. Hogg, Mr. M. Thompson, and Mr. W. Parnell. The secretary drew attention to the report of the Architectural Alliance, but as it was a voluminous pamphlet, he recommended that it should be reported upon by the committee, and it was agreed to. He also drew attention to the proposed establishment of an association of younger men, and hoped, if they could see their way clear to it, they would become connected with the Northern Association. The members of the class could have that room, they could have the benefit of the books of the association, and also of the instruction certainly of Mr. R. J. Johnson, the vice-president, and the president, Mr. A. M. Dunn. A short discussion ensued upon the question of the suggested class, and it was pretty generally understood that should the members of the society recently formed apply to the Northern Architectural Association, they would be admitted as associates, and reap, for the small entrance subscription, the benefits of the society. The discussion (to be introduced by the ex-president) "On the Principle involved in the Establishment of Professional Charges for Valuations in connexion with Compensation Cases," and the paper by Mr. Oliver "On Architectural Retrogression in the North of England," were deferred until the next meeting.

CONSECRATION OF ST. LUKE'S CHURCH, NEW KENTISH TOWN.

ON Saturday a church was consecrated, in lieu of the old church of St. Luke, King's Cross, which was demolished by the Midland Railway Company in making their station at St. Pancras.

The new building is situated in Kentish Town, to the west of the Camden-road. It is in the Early English style, and is constructed of red brick in the main parts of the structure. Stone is, however, used in the interior around the windows, for the ribs of the groining, and for the span of the arches. The dressings are of Tisbury stone, supplied by the Wardour, Chilmark, and Tisbury Stone Company, London.

The chancel is groined, and the nave is separated from the side aisles by four bays, with marble pillars on each side, surmounted by a clearstory. The interior roofing is wagon-shaped, and of timber. A square tower marks the intersection of the chancel and nave. Beneath it are the reading-desk on the south, and pulpit on the north side; and in the sacrarium are three sedilia, a piscina, and a credence-table.

The sum of money paid as compensation by the Midland Company was not sufficient to rebuild the edifice, and there still remain about 1,400*l*. to be cleared off before the church will be free from debt. Mr. Champneys (a son of the Dean of Lichfield) was the architect.

THE DISPOSAL AND PRODUCTS OF DRY SEWAGE BY BURNING.

THE production of gas by burning and distilling dry sewage in India has excited some interest in this country. A pamphlet giving an account of "the carbonisation or dry distillation system of conservancy," by W. R. Gilbert Hickey, C.E., of Darjeeling, the inventor of the system; with a note on dry sewage, by F. J. Mouat, M.D., inspector-general of jails in the lower provinces of India, has been printed at the *Darjeeling News Press*. Mr. Mouatt speaks very favourably of Mr. Hickey's process, and Mr. Hickey thus speaks of it himself as "the carbonization or dry distillation system of conservancy."

"This system proposes to render filth of all kinds innoxious, by carbonising in close retorts,—using the residue in the retorts for deodorising fresh filth in transit to the apparatus, utilising it and the products of the distillation for manure. The gas being available for heating or lighting purposes, or for both.

The system may be divided under three heads.

1st. When the gas is to be utilised only for heating the furnaces.

2nd. When the gas generated from the filth itself is to be partially or entirely used for illuminating purposes.

3rd. When the gas from the filth is to be utilised for heating the furnaces, and fresh gas made at small expense for illuminating."

The filth carbonised by these systems, Mr. Hickey remarks, is at once and for ever rendered innoxious even on its journey to the apparatus. It can never regain any of the objectionable qualities of filth. The vitality of all organic bodies is destroyed. The poudrette (carbonised residue in the retorts) is a black powder, perfectly free from smell, and is an admirable deodoriser for solid and liquid filth.

The gas yields a very brilliant light, and is perfectly unobjectionable. The poudrette and the refuse in the condenser, &c., contain animal and vegetable charcoal, with phosphates, carbonates, and sulphates, of potash, soda, magnesia, lime, iron, &c., the mineral or earthy materials of plant food, and also ammonia and carbonic acid, which are the organic materials.

The prime cost of the apparatus, he says, is trifling, and the system will be self-maintaining as regards fuel for the furnaces.

By means of a desiccating or evaporating pan on the top of the furnace, and mixing some hydrochloric acid with the refuse from the hydraulic main, sal ammoniac may be made in large quantities.

He claims for his invention that it is perfect in a sanitary point of view; that it is economical; that the manure is of first quality, portable, and innoxious; that the gas is luminous and innocent.; and that the poudrette is a perfect deodoriser for solid and liquid filth.

ON THE PUBLIC WORKS DEPARTMENT OF INDIA.

IN your article of October 30th, attention is drawn to the manner in which the Public Works Department of India is carried on. A few observations on the salient faults of the system may not be out of place.

Up to comparatively lately the East-India Company were so occupied with the extension of territory, that it was necessary almost every man in their employ should be a military man, at a moment's notice to throw aside the pen and the rule, to gird on the sword; to be more capable of attacking and defending positions than of erecting civil works. Hence, it followed, military engineering was the only road to preferment. As territories were subdued, it became necessary to make roads: on occasions no engineer was to be had.

Officers of the other branches of the service, who at school had obtained an inkling of surveying and military engineering, proferred their services. With the energy of young men placed in difficult positions creditable work was accomplished. As a reward they were kept to engineering duties.

On the demand for the greater extension of public works, engineers of all classes were pushed up by the rules of seniority into high positions, and had to undertake the construction of works for which many of them had not knowledge. Thus it is, that men who had earned high position by gallant and faithful service in the field, lost their good name from failing to carry out works they were never brought up to.

The Public Works Department is composed of men of different grades, but all depend for their position on knowledge of the surveying branch, which enables that service to be carried out in as able a manner as in any part of the world, as each one has to work at it, and is master of the subject; but the constructive branch presents a contrast, from none of the department having been educated in the art of building.

The officer brought up at Addiscombe, and sent out to India, has not been in a position to learn the practical part of building, but is only acquainted with it theoretically, and all subsequent knowledge is only obtained from the natives, the very ones he is supposed to teach. The civilian engineers educated in India are in a like position.

As plans are prepared at head-quarters, the probability is a resident engineer has only to erect a building (the word building is meant to include every description, from bungalows to bridges) similar to what has been done before, the cases cited of buildings falling are solely owing to faults in construction; and, from having charge of a large district, perhaps 100 miles in one direction by 50 in another, he can but visit it now and then. An overseer, perhaps an excellent man for laying out and repairing of roads and keeping accounts, is put in charge; but, being entirely ignorant of building, the construction is left entirely to the native workmen, who are not very particular about building perpendicular and straight. As the bricks are very soft, it is easy to edge the walls, if they will get wider at the top than the bottom. Also, they are not at all particular about the bond. Very often the walls are built with mud, only the top course and wall-plate being laid in mortar. Saplings are at times used for the rafters. In these cases it is but a question of time for the roof to come down, as white ants are sure to get into it.

The difficulties to be contended against in the construction of works, and the incessant minute attention required, are only known to those who have encountered them. The facilities afforded by residing in towns is no criterion for the country at large.

The faults of the present system are, that the members of the engineering staff are all brought up to one department of their profession, leaving the constructive branch to be learnt as it can. There is no acknowledged position for a man who only understands building, and native

workmen are expected to carry out English design.

The remedy is to divide the Public Works into two departments: one for the surveying, road-making, &c.; the other for works of construction. To form this latter, inducements must be offered, for such men as clerks of works, foremen, &c., who have a thorough practical knowledge of the trade in all its branches, who can use their hands as well as their heads, to enter the service. To obtain them, liberal terms must be given, and no demands made as to proficiency in languages. The advantages would be great. The Eurasian, whose ambition is now to be a road overseer, would be taught the European method of building, and would learn that the craft he now despises is as great a science as that of surveying; the native would learn that, wonderful as are the buildings erected in former ages by his forefathers, the method is too cumbrous for the present age. A new era has arisen in his craft as well as in that of English policy in India.

MIKROS.

SYMMETRY, IN REFERENCE TO SOUND.

SIR,—Referring to Dr. Rawson's paper on the above, I am unable to see what is gained by considering the squares of the numbers instead of the direct relation of the numbers themselves to each other. If the latter be in proportion to one another, will not their squares be so of necessity (but geometrically, not arithmetically)? Agreeing with the principle that the length, breadth, and height of apartments should bear proportions to each other in whole numbers rather than in broken ones: as 6, 4, 3, rather than 6, 4, 3½, for instance, I would point out, in addition, that this brings all the surfaces of the room into proportional relations. In a room 24 by 16 by 12 (proportion 6, 4, 3), the floor and ceiling are each 384; the side walls, 288; and the end walls, 192; or in the proportion of 4, 3, 2—still whole numbers. Is not this circumstance more likely to influence the acoustic properties of a room than the arithmetical relation of the squares of the numbers to one another; the former being in fact what constitute the room, and the latter being non-existent materially?

I beg to suggest, however, another system, in which the dimensions bear a geometrical relation to one another, viz., by using the square and its diagonal, or the base and height of an equilateral triangle. By the former, a room 24 ft. long would be 17 ft. wide and 12 ft. high (not exactly, but sufficiently near for practical purposes), and the wall, &c., surfaces would bear also geometrical proportions (in figures 408, 288, 204, or as 34, 17, 12).

By the equilateral triangle it is believed that the *section* of Milan Cathedral was determined, and some indeed consider it to have been used generally in the Middle Ages.

W. R. CORSON.

A PLAN FOR WIDENING THE STREETS.

SIR,—The plan proposed by Mr. Fred. Taylor requires careful consideration before it be pronounced upon.

Practical experience has not shown that it is desirable in large towns to have covered pathways in the public thoroughfares, as they usually become the resort of not the most respectable portion of the community, possessing an attraction from the partial seclusion they afford, and as a shelter in all seasons. But as a temporary remedy for the evils of our crowded thoroughfares, a plan open to fewer objections might be suggested.

The number of columns to support the upper line of houses would, as shown in the diagrams, most materially intercept the light to the shop windows, which are 10 ft. from the columns, greatly to the disadvantage of the unfortunates who would be compelled to work partially or wholly by gaslight.

If the streets are to be widened by taking a portion of the shop frontage and converting the space into a covered causeway, attention should be directed to three important matters, viz., the adoption of a plan giving the maximum amount of light and ventilation, and the least obstruction to a crossing traffic.

The diagrams show the minimum of each, and a heaviness of effect, combined with great loss of light and ventilation, would be the inevitable result.

The number of columns should be reduced and the height increased, and instead of 9 ft. apart, a distance of 30 ft. or more is desirable. The upper line of houses might be supported on wrought iron horizontal girders, the depth for which would be found between the top of the columns and the under-side of the cill-line of the windows above, and the width in a partial projection of the girder as an ornamental front, and in the thickness of the brick and stone wall to be supported.

A very handsome and elegant effect might be obtained by a judicious treatment in design of the columns and the front of the girder, and the result desired would be attained, probably, in the most satisfactory way. To give additional light, the girders might be pierced at intervals of 10 ft., and a circular light introduced, which would occupy a space between the lower flange of the girder and the floor-line above, giving light to the upper portion of the shop-windows, which would otherwise be in shadow.

The shops in the narrow streets are probably already too small for the business transacted therein; and if a space of 10 ft. is taken from the front, the gutting and reconstruction of the whole of the ground-floor would be necessary, and it is questionable in many cases if the area available would permit so large a space to be abstracted.

The cost would be much greater than appears at first sight, and ultimately the money spent would not confer, I fear, advantages of sufficient magnitude to warrant the outlay.

JOSEPH S. FORBES.

UNEMPLOYED LABOUR.

SIR,—At this period of the year, when over 100,000 hands are out of work, and the pressure upon the money market has shut up private sources of work, an observer of the desolation apparent upon the site chosen for the Law Courts begs to suggest, through the *Builder*, the expediency of redeeming some of the time already lost by setting to the works with a will. The employment of even 100 men would give stimulus to trade, and perhaps lead to the engagement of 500 hands more in tributary employment; it is hard to see great public works slumbering whilst so many operatives are idle at this inclement season.

ÆDIFICATOR.

THE ART-UNION OF LONDON.

THE Art-Union Council have issued their capital little Almanac for the coming year, containing, as we have often said, information on societies and collections in connexion with matters of art and science, not to be found collectively noted elsewhere. Every subscriber of one guinea will receive, besides the chance of a prize, a beautiful volume of twenty illustrations of "Hereward the Wake," drawn by Mr. Henry C. Selous, a volume intrinsically worth much more than the amount of subscription.

The New York *Citizen and Round Table*, gives an Art-Union anecdote. The writer says,—"Among the pictures purchased by the American Art-Union for distribution in 1845, were three pictures by Mr. George Harvey (formerly a resident of this city, but now living in England, and a good artist), one of which was a flower piece. As a return for the compliment paid him by the association, Mr. Harvey subscribed for three chances in the Art-Union, placing his own name down for two, and for a little girl of his acquaintance the name of Daisy, presenting her with one of the tickets. When the distribution (by lot) took place, the flower piece by Harvey became the property of his little friend Daisy; but the most singular circumstance of all was that the companion of the said picture had been purchased by the father of the child, so that a pair of the artist's productions are now hanging side by side in the same drawing-room." The *Cosmopolitan* adds, "We have heard Mr. Harvey tell a similar case, which occurred to his sister in England, to whom he had made a present of two tickets in the London Art-Union. The first one gained nothing beyond the superb print given to every one. The next year his sister stipulated with Mr. Watson (assistant secretary), that by paying 7*l.*, in addition to the ticket (we think that was the sum), she could have the statuette which she desired to possess. Mr. Harvey persuaded her not to conclude the bargain till after the drawing of the prizes. Her ticket drew the statuette." We could relate dozens of such coincidences.

We have received a letter from New Bedford, Massachusetts, United States, wherein mention is made of the interest with which a landscape of English scenery, by W. Luker, gained in the last distribution of the London Art-Union by Mr. C. Hazeltine, of New Bedford, has been viewed. The wide-spread relationships of this Association are amongst its most interesting and valuable characteristics.

GASELIERS IN THEATRES.

FEELING sure that theatrical managers are ready to abate any supposed risk of danger to their patrons, allow me to point out to those whom it may concern the following risk easily removed before being too late. Some of our theatres have large central glass gaseliers, with pendants, which are, by the draught of air drawn up, in a constant swinging motion. Friction is going on with the slight supporting wires, and sooner or later a few of the pendants will quietly drop on the head of an attentive auditor, and may cause a scene never contemplated by any when first entering the theatre. A word from you, I am certain, will be sufficient to lead to a remedy.

S.

IMPROVEMENTS IN BUENOS AYRES.

THE municipality are seeking to raise a loan of 35 million piastres, to carry out some important public works which will amount to 24 millions, and the rest is required to cover the deficit of the ordinary expenditure for 1870. Nothing can be more laudable than this disposition to improve the state of the city, but those who know most about it see great difficulties in the plan, and urge that it would be better for the municipality, instead of raising 35 million paper dollars for contractors in the shin-plaster way intended, to negotiate with some respectable London firm for the whole job at a million sterling. The public will have every confidence that the money is not squandered, and that the improvement will be done in a workman-like way.

The proposed works are the following:—

	Piastres.
New Men's Hospital	4½ millions.
New Cemeteries	3 ,,
New Law Courts or Cabildo	2 ,,
Paseo Julio decorated	2 ,,
Plaza Victoria	1½ ,,
Lunatic Asylum	1 ,,
Lazzaretto	2 ,,
Paving the Suburbs	5 ,,
New Plazas	1½ ,,
Repairs (old) Men's Hospital	1 ,,
Town-hall	½ ,,
Total	24 ,,

Besides the sum of 69,000*l.* already laid out on the waterworks, the estimates for extending the water supply, and draining and paving the city, are:—

Waterworks	£ 95,000
Drainage	598,746
Paving	178,571
	£872,317

Mr. Coghlan's waterworks are said to be a great success.

THE TREATMENT AND UTILISATION OF SEWAGE.

THE Hon. Secretary to the Committee of the British Association on the Treatment and Utilisation of Sewage, Mr. G. F. Barnes, has issued a circular in which he sets forth the circumstances under which the committee were appointed, at the meeting of the British Association at Norwich, for the purpose of reporting on the treatment and utilisation of sewage. Through the kindness of her Majesty's Government, the committee have been enabled to obtain reports respecting the methods of dealing with town refuse practised in most civilised countries, and information has now been collected in a more complete form than hitherto existed in any country. This preliminary work having been completed, the committee was reappointed at the meeting of the Association, this year at Exeter, and they now propose to investigate the entire subject in all its bearings,—whether chemical, physiological, or engineering, sanitary, municipal, or agricultural,—and in a manner worthy of the body they represent. Properly to carry out such an inquiry to a practical end, numerous observations, gaugings, and experiments, aided by simultaneous analyses, are essential; and these cannot be accomplished, especially the analyses, without the continued aid of efficient and therefore highly-paid assist-

ants. It may also be necessary for the committee to purchase expensive apparatus, and to subject various inventions and processes to a thorough and complete test.

As the expense of an inquiry so conducted must be considerable, the committee seek to obtain pecuniary aid in the shape of town and district subscriptions. They suggest that the subscriptions of towns of different populations might be graduated somewhat in the following proportions.

Where the population does not exceed 10,000, 5*l.* 5*s.*; between 10,000 and 25,000, 10*l.* 10*s.*; between 25,000 and 50,000, 21*l.*; between 50,000 and 75,000, 30*l.*; between 75,000 and 100,000, 50*l.*; above 100,000, 100*l.*

All public bodies subscribing not less than 5*l.* 5*s.* will have the benefit of the information obtained by the committee from time to time, as the results of the inquiry partake of a conclusive character, and will receive a copy of the report of the committee when published.

The following are the names of the committee: Mr. Richard B. Grantham, M. Inst. C.E., F.G.S., chairman; Mr. J. Bailey Denton, M. Inst. C.E., F.G.S.; Mr. J. Thornhill Harrison, M. Inst. C.E.; Mr. Benjamin H. Paul, Ph. D., F.C.S.; Professor Wanklyn, F.C.S.; Mr. William Hope, V.C.; Professor Williamson, Ph. D., F.R.S.; Professor Marshall, F.R.S., F.R.C.S.; Professor Corfield, M.A., M.D.; Mr. M. C. Cooke; and Sir J. Lubbock, bart., F.R.S., treasurer.

The united contributions of the English towns would enable the committee to conduct an investigation which must confer upon the nation immense benefits. Subscriptions should be paid to the credit of Sir John Lubbock, on behalf of the committee, at Messrs. Robarts, Lubbock, & Co., 15, Lombard-street, London, E.C.

BOARDS OF WORKS AND CONTRACTORS.

SIR,—I attended, on behalf of a contractor, last week, a meeting of the Board of Works for the Lewisham District who sat for the object (among others) of receiving tenders for the construction of brick sewers.

Persons tendering were, by notice in the *Builder*, to be at the offices of the Board by twelve o'clock on the day appointed, and accordingly before that time about twenty contractors, or their agents, were assembled, and had to wait for two hours before the "verdict" was announced.

Now, I am fully sensible of the fact that the expenditure of the ratepayers' money is at all times a matter of great moment, and, therefore, demands much consideration and deliberation before paying it away. Still, I cannot help thinking that decisions, determinations, and selections in these cases could be arranged and arrived at by the Boards *before* the time fixed upon, at which competitors are to attend, so that when they arrive as little time as possible may be lost in making known their decisions, &c. This consideration would prove an incalculable benefit to contractors, particularly to those coming from a distance.

The Board of Works for the W—— District is quite a pattern in this respect, as also in the more congenial system of calling into the board-room the whole of the contractors *to hear the amounts of the tenders read over*, instead of the very objectionable and unsatisfactory way the intimation was given by an official of the Lewisham Board that "Mr. Hayward's tender is accepted," and "a list of the tenders will appear in the *South London Press*."

One more remark, and I have done. There can be no doubt that luncheon on a cold, damp, December day is an "indispensable," but that a more suitable time than 'twixt one and two o'clock was not selected created some surprise, not to say displeasure; perhaps, however, this feeling would not have been generated if the gentlemen in the "upper story" had bestowed a thought on the anxious persons,—from concomitant circumstances,—not "over happy" below.

Anticipating more sympathy from boards of works after the insertion of this, I am,

CONTRACTOR'S AGENT.

PROBABLE CAUSES OF SCARLATINA.

IN a special report of the Medical Officer of Health for Mile-end Old Town (Dr. Corner), upon the epidemics of scarlatina and relapsing fever, the former of which is more than usually prevalent in Mile-end Old Town, the Medical Officer of Health says;—

"In my last annual report for the year ending March, 1869, I again referred to my previously expressed opinion of old, disused, and defective drains and sewers being special centres of the propagation of Scarlatina, and even of the generation of the specific poison or germ of the disease; but in this latter part of my opinion, I believe I am not supported by many authorities, although my own continued, and, I may add, best possible practical experience, as evidenced by examples which I quoted, continues to confirm my belief in its correctness. Probably such a source may be considered as too common-place and practical, and not sufficiently abstruse and theoretical for the origin of so serious and devastating a disease; but however the case may be as to the *origo mali* of the specific virus, my experience admits of no doubt that all drains and sewers in the condition I have indicated, and *with which London and all old towns are now literally undermined*, are hidden reservoirs, containing a never-failing supply of materials which cherish and mature the specific virs of infectious diseases.

It may be reasonably questioned that if defective drainage is especially a cause of scarlatina, why has not improved sewerage and drainage diminished the number and severity of its visitations? This objection has been advanced as a proof that sewage matter does not generate or possess any special or active property for the causation of the disease; whereas this fact actually assists to confirm my proposition, for the reason that when new sewers and drains are made, the old cesspools and channels are almost invariably allowed to remain intact, instead of being emptied and destroyed; and, although disconnected with main sources of supply, they very generally preserve a minor connexion of some sort. In any case, most of the previous contents of deposited inspissated matter, containing all the active procreative elements of infectious diseases, remain stagnant and intensified from being deprived of the purifying and detergent influence of a constantly moving stream. These disused sewers and drains have been allowed to remain on account of the considerable immediate cost of their abolition, and of the difficulty in discovering the great number which run like a network under the basements and at the rears of houses.

If, therefore, such a disease as scarlatina is driven back or suppressed by various sanitary measures from without, it retires upon, and is received by, a genial soil from which it replenishes its exhausted virulence. Were those hidden agencies of disease and death exposed to view, they would excite astonishment and disgust at their existence, and would not be allowed to remain longer than necessary for their removal."

The report recommends, amongst other measures, the discovery and abolition of all disused and defective drains and sewers.

A fine example of a not unfrequent way in which disused cesspools may be converted into a fertile source of disease recently occurred in our experience. A gentleman, in the Old Kent-road, who lives in one of his own houses there, being dissatisfied with his dwelling as to healthfulness, had it properly drained, and the kitchen and rooms over it enlarged. The building contract was advancing towards a close, when he accidentally discovered, just before it was too late, that, under the contract ,some rubbish had been thrown over an old and deep cesspool within the new kitchen walls, and full of filth, the rubbish hiding it from view till the floor should be laid down. He was assured by the contractor's men that everything obnoxious was withdrawn before the rubbish was thrown in. Disbelieving this, he ordered it to be turned out, and found, as he suspected, that his new kitchen was about to have covered up within its walls a reeking cesspool, full of filth of an abominable description, and a certain but unknown source of future disease and death in his family, even through the very means he was taking to secure their life and health.

BEHAVIOUR TO CONTRACTORS.

SIR,—We beg to call attention to the conduct of the directors of the London and South-Western Railway Company in the matter of works required to be done at Vauxhall and Nine Elms, for which they advertised for tenders, in consequence of which we applied for quantities, and delivered in our tenders, the amount of the first being 2,128*l.*, and the second, 1,209*l.* On applying to learn the result, we were informed that Messrs. Gammon & Sons' tenders had been accepted for both the jobs; but, as to the amount of either, or, indeed, the amounts of any, of the tenders, nothing could be learnt; it merely being stated the Company never gave any information except as to the successful party, which we consider most unfair, as at least a list of the tenders ought to be produced on application.

HEAVER & COATES.

ACTION AGAINST AN ARCHITECT.

Skinner v. *Finn*.—This was a jury case in Exeter. The plaintiff, a builder of Exmouth, sought to recover 10*l.* 10*s.*, paid to the defendant, an architect, of Exeter. Mr. *Fryer* for plaintiff, Mr. Gidley for defendant. Mr. Windover, of Exmouth, wished to erect a building called the Holly Tree Inn, at Withycomb, and he employed the defendant as his architect. Mr. Skinner and others tendered for the work; but the figures were considered too high, and after some alterations had been made in the specifications the same persons were invited to tender again. In the end plaintiff's tender was accepted. This was about the 17th of August. Shortly afterwards Mr. Skinner received the following letter from the defendant:—"Sir: Send me a cheque for 10 guineas for the working drawings and specifications, and I will cover the insurance for the same amount. This need be settled before the work proceeds further. An answer, with as little delay as possible, will oblige, else you will be kept waiting for the drawings." Upon receiving this, Mr. Skinner sent defendant 10*l.*, and afterwards paid him the odd shillings; but (as he alleges) he did not receive any working drawings from Mr. Finn until six weeks after the building was commenced, when drawings showing the seating of the bar-parlour and the plan of the bay-window were forwarded to him. These drawings (produced) were not such as should have been supplied by the architect, and he was put to great inconvenience, having been obliged to resort to his own tracings, which he took before tendering for the job. In reply to Mr. Gidley, plaintiff said he did not agree to pay 10*l.* for the drawings: Mr. Finn asked him to pay some little acknowledgment, and on receiving the letter (given above) he paid the money rather than be kept without them. By the Judge: The plans upon which he based his second tender were tracings from the architect's drawings. They were quite sufficient for him to build the house from; but, having paid for working plans, he expected to be supplied with them. Working plans were usually on a larger scale than those submitted to builders before tendering. In defence, Mr. Gidley said his client told all who came to examine the specifications that they would have to pay for working plans; and when—plaintiff's tender having been accepted—he asked Mr. Skinner what he would pay, he offered 10*l.* Mr. Finn, having been sworn, corroborated this; and stated positively that he supplied defendant on the 9th of September with copies of the ground plans, elevations, and sections, mounted on cloth. He also let him have extra drawings, which were not usually supplied by architects. It was an ordinary thing for an architect to charge the builder for working drawings. Messrs. Windover, son, and jun., and Henry Manning, proved having seen plaintiff working from plans similar to those produced by the defendant. A lad named Mingoe, in the employ of the defendant as clerk, deposed to having assisted to copy the drawings; and Messrs. Moase (Exeter), Luscombe & Harris (Exmouth), all builders, showed that the plans were quite sufficient for defendant's purpose—that, in fact, they were legitimate working drawings. The latter witnesses said they had often paid architects for similar drawings. His Honour, in summing up the case, pointed out the conflicting nature of the evidence. The jury returned a verdict for the plaintiff for 9*l.*, the foreman explaining that the claim was reduced to that amount because plaintiff had agreed to pay an acknowledgment of some kind.

*** Is it "an ordinary thing for an architect to charge the builder for working drawings?" We believe not. It is the duty of the architect, in the interest and at the cost of his employer, to supply the builder with all the drawings that may be necessary for the proper execution of the work.

NEWCOMEN OR NEWCOMIN?

SIR,—This name is peculiar: we have several *Newcombes*, but very few *Newcomens*; *Newcombe* may be from the Celtic *cwm*, "a hollow, or bowl-shaped valley;" cum in Cumberland the land of *cwms*, it assumes the form of combe in the south. As the inventor of the steam-engine is known to have come from Devonshire, where the form *combe* predominates, I infer that this word is not the etymon of his name; and would, therefore, suggest that it may be of Teutonic origin, allied to that of Chevalier Neukomm, the musical composer; *i. e.*, newcomer, a real Johnny Newcome. Komm is from the German verb *Kommen*, to come; our Anglo-Saxon verb *cuman*, to come, has the form *cumen* for the perfect participle, but I see no authority for the form *comin*; while it is well established that Newcomen is the received form of this particular name. In this form, also, it appears as the patronymic of an ancient race of our territorial aristocracy, seated at Saltfleetby, Lincolnshire, so far back as the reign of Richard I.; their descendants in the present day, however, use the form Newcome; we may assume that this Lincolnshire family was certainly of Angle or Saxon, *i. e.*, of Teutonic origin.

A. H.

INJURIES TO WORKMEN.

AN action was recently brought before the Sheriff Court at Hamilton, in Scotland, by Hugh Cassidy, labourer, Hamilton, against Robert Pollock, contractor, Motherwall, for recovery of damages, laid at 500*l.*, from injuries sustained through the culpable negligence of the defender, or of those acting under him. The pursuer was in the defender's employment in July, 1868, and he and others were engaged in taking down a bridge over the Monkland Canal, near Parkhead, Glasgow. While one of the piers supporting the bridge was being removed, an embankment fell upon the pursuer, who was at the time working in the bed of the canal, and in consequence his leg was broken, and injured so severely that shortly thereafter it had to be amputated above the knee, and his body and hands were crushed, and his physical system and health so severely injured thereby that he had been permanently maimed and disabled, and rendered unfit for life to earn a livelihood. The Sheriff-Substitute (Veitch) had found that the defender was to blame in not having had the earth removed from behind the pier before pulling down the stones, and held the defender liable in damages to the extent of 25*l.*, with expenses. The case was appealed to the Sheriff-Principal, Mr. H. Glassford Bell, who adhered to the interlocutor appealed against so far as it found the defender liable in damages, but increased the amount from 25*l.* to 50*l.*

CHURCH DECORATION.

SIR,—As an item of "Christmas Decoration," I seek information about "Christ's crown of thorns," which, however, more fully concerns Easter.

I much desire to know what tree or shrub is, and has been, most generally used among us for this purpose in church decorations. The *Paliurus aculeatus* and the *Zizyphus spina-Christi* have the established reputation of being, one of them, the thorn really used at our Saviour's crucifixion; but, not being native with us, I wish to know what is our popular substitute, or substitutes.

A. H.

OXFORD BATHS AND LECTURE-ROOM, ASHTON-UNDER-LYNE.

THIS building, erected by Mr. Hugh Mason, of Oxford Mills, for his workpeople, has been decorated by Mr. A. T. Bushell, under the orders of Mr. Robinson, of Paull & Robinson, Manchester, the architects of the building.

The passages and grand staircase show a dado of maroon, stencilled in a large bold pattern, crowned by a broad belt of black, on which are red spots, above which the wall is finished in mauve, stippled. In the lecture-room the ventilators are heavily gilded; the centre compartments are painted blue, with lines and corner ornamentation in orange; beneath them, on the slope, is a rich frieze, and the cornice finishes with a pattern. The wood-work of the roof is stained and varnished, and its lines and mouldings brought out in black, red, and green. The walls are of a warm buff tint; the dado, which is wood panelling, being stained and varnished, and surmounted by an ornamental border in brown, running along the wall. The brackets and busts are treated as the bas-reliefs in the rooms below, and on each bracket the name of the bust placed upon it is inscribed in letters of gold.

CHERTSEY CHURCH.

The old parish church was re-opened on the 2nd inst., after a complete internal cleansing, and restoration of the nave and chancel, and repairs of the roofs, at a cost of 1,300*l*. The ground-floor of the nave has been re-seated throughout in oak; the galleries in the nave, which contain private pews held under an Act of Parliament, have been repainted, and the pews in part cut down. A new pulpit by Messrs. Farmer & Brindley has been erected at the cost of Mr. T. J. Worthington. Messrs. Herring & Son, of Chertsey, presented the hot-water heating apparatus. A reredos in Caen stone, with columns of Devonshire marble, and oak seats for the choir, have been put in the chancel, the ancient oak roof of which has been thrown open by removing the ceiling. The floor of the chancel has also been raised.

The nave was built in a curious manner in 1808. Across the church, at a point where the columns and buttresses were designed, strong oak bearers were laid resting upon wooden frames, and on these stout posts of whole timbers were erected, which carried the massive wooden roof and plaster vaulted ceiling. Rumour says that the contractor then drew the money that was due on "covering in" the building, and disappeared. The walls were afterwards built so as to enclose the nave, and the external upright timbers were encased in the buttresses.

The work has been executed by Messrs. Dove, Brothers, from the designs and under the superintendence of Mr. Blashill, of London.

AUCTIONEERS AND PUFFERS.

GILLIATT *v.* GILLIATT.

The question in this case, tried in the Rolls Court, was of interest to auctioneers and others having to do with sales of land by auction. An estate in Sussex was offered for sale by auction by Messrs. Norton, Trist, Watney, & Co., subject to a reserved bidding fixed by the judge, and this was stated in the conditions of sale, in compliance with the requirements of the Sale of Land by Auction Act, 1867. Mr. Bridges, to whom the estate was knocked down for 29,000*l*., having found out that a "puffer" was employed, although no right of bidding on behalf of the owner was reserved, contrary to the provisions of the above Act, took out the summons to set aside the purchase, which was now adjourned into court. It was proved that a "puffer" had been employed, who had bid on himself and made in all four bids, though he did not go beyond the reserved price.

Sir Richard Baggally, Q.C., Mr. Jessel, Q.C., Mr. Whitehorne, and Mr. Langworthy appeared in the case.

The Master of the Rolls said that the Act was clear to the effect that sales should be void in equity as well as in law where a "puffer" was employed, although no right of bidding on behalf of the owner was reserved. The sale must be set aside, and the deposit returned.

CHURCH ARRANGEMENT.

Sir,—May I venture to suggest that "Galilee" is the proper term for the western entry of Inverness Cathedral (which resembles the plan of Melbourne Church) rather than "narthex," or "cloister," both of which are inappropriate. The word "chantrey" is evidently an oversight on the part of the architect, in conjunction with a vestry, or any sacred building of the reformed church.

May I urge, in unison with Dr. Rawson's letter, how desirable it would be to have a large organ set free for music adapted to its capabilities, and a small choir-organ to accompany the chanting, psalms, services, and anthems, near the choir. At Meaux Abbey, in England, such was the custom before the Reformation, and in the north of France it is still observed. The huge organs now in vogue are utterly out of proportion to the size of the choir of singers, whom they overpower, and are too often insisted upon merely for the sake of display in performing elaborate music. They occupy a great amount of space, and constitute a piece of furniture for which it is difficult to find room.

Mackenzie E. C. Walcott.

THE LEEDS VOLUNTEER ARTILLERY HEAD QUARTERS.

A building for this purpose is about to be erected on the drill-ground of the Leeds Volunteer Artillery, Fenton-street, in that town, from the design of Mr. James Fox, C.E.

It will include on the ground-floor:—Drill-shed, (inside) 120 ft. by 83 ft.; armourer's shed, 18 ft. by 18 ft.; armoury, 39 ft. by 18 ft.; adjutant's room, 18 ft. by 17 ft.; orderly-room, 18 ft. by 17 ft.; non-commissioned officers' room, 17 ft. by 15 ft.; harness-room, 15 ft. by 10 ft.; sitting-room, 18 ft. by 13 ft.; kitchen, 15 ft. by 13 ft.; and on the first floor,—mess-room, 45 ft. 6 in. by 18 ft.; quarter-master's store-room, 39 ft. by 17 ft.; vestibule and stairs, 18 ft. by 15 ft.; officers' room, 17 ft. by 15 ft.; dressing-room, 15 ft. by 10 ft.; bedroom, 18 ft. by 13 ft.; ditto, 15 ft. by 13 ft.; promenade, 18 ft. by 10 ft.; balcony, 30 ft. by 4 ft.; band-room (in open yard on ground), 25 ft. by 16 ft.; two rooms in tower, each, 12 ft. by 8 ft.

The building, which will be of stone, and with some pretensions, professes to be Norman in style, with tower over an open porch in centre, the whole desperately battlemented. While we are glad to recognise the evidence such a building shows of a liberal spirit, we cannot refrain from expressing a hope that the design may be revised before it is put into stone. The proposed building on paper has a toy-like, not to say tea-gardeny, aspect.

EUSTON SQUARE.

Poor Euston-road is losing one of its lungs. The north lung—in other words, the northern part of Euston-square is, to all appearance, in the hands of the railway company; boarded in, dug into, and cut about, and I am afraid not to improve the breathing of the inhabitants. Some say it is for a road to the station; the deep digging appears to say no to this. Others think it is for the station itself. What do you, Mr. Editor, say? Can it be possible that the central third part of that side of the square is to give way to another monster building, both in size and look, as the one a little higher up the road? To stop it I am afraid is too late, according to the saying, "that possession is nine parts of law;" then I ask, how many points has law? Perhaps the railway will answer, "Nine, only; and we have them all." I long to hear what is to be this new feature in our street despoilment.

S.

FOR TAKING STAINS OUT OF WHITE MARBLE.

In answer to your correspondent's inquiry, as to the most effective method of taking stains out of marble, I have generally found the following recipe the most effective, viz.:—

1 gall.
1 wineglass of soap lees.
½ wineglass of turpentine.

Note.—The mixture must be made into a paste with a little pipe-clay. Spread the marble with this, which should not be removed for a few days, and if on wiping it off the object is not effected, a second application will generally be found sufficient.

George Hand.

"CABBY" IN LITCHURCH.

At the usual monthly meeting of the Litchurch Local Board, Mr. Thompson, the chairman, referred to the recent endeavour of the Board to get the Midland Railway Company to provide shelter for the cabmen at the station, and said that he had noticed a paragraph in the *Builder*, which stated that the experiment had been tried in Edinburgh, where an erection for the accommodation of the cabmen at one of the stands had been raised by public subscription, and had been attended with good results. Cabmen, in consequence of their exposure at the cab-stands to all kinds of weather, were great sufferers from consumption, acute chronic rheumatism, and bronchitis, aggravated by their intemperate habits, which, there could be no doubt, were indulged in under the (greatly mistaken) belief that intoxicating liquor was a great preventive against cold. The *Builder*, he was glad to say, hailed with pleasure this movement in favour of poor "cabby."

Mr. T. Roe, jun., had no doubt some good would result from their late application to the Midland Railway Company, and that even in Derby something would ultimately be done to provide shelter for the cabmen.

COMPETITIONS.

Bexley Church Competition.—The committee for building a church at Bexley Heath are obtaining for themselves an unenviable notoriety. After receiving designs from Messrs. Walford & Evill, and Mr. Hewitt, they invited a competition, to which 79 architects responded, from amongst whom they then selected the following gentlemen to re-compete, the majority of whom, if not all, sent in drawings:—Messrs. Joseph Hewitt, H. W. Burgess, C. H. Cooke, Walford & Evill, Price & Linklater, Wigginton, E. L. Blackburne, Drury, Goodchild, Knight, Joseph James, and T. E. Knightley. A pledge had been given that the committee would call in an architect to assist them in their selection, and Mr. W. Burges was appointed by them to do so. This gentleman selected three as best deserving consideration, the mottoes being "*Veritas vincit*" (1); an oval with orb and cross in it (2); "*Simplex sed Veritas*" (3). The committee, however, by a narrow majority, threw overboard the three named by their referee, and have, we believe, made a selection for themselves. At any rate, the honorary secretary, Mr. Blyth, resigned his office, as his predecessor in that office, we understand, had done before.

Ventnor Cemetery Competition.—The designs selected by the Burial Board have been rejected by the Bishop-Elect of Winchester, his lordship requiring the buildings to be *detached*. Mr. Newman, the architect, has, therefore, been instructed to so modify his plans as to comply with the bishop's requirement, and the consequently altered views of the Board. We believe the intention of the Board now is to have two distinct but uniform chapels, one placed conveniently on the consecrated ground, and the other on the unconsecrated portion.

Printers' Almshouses.—We mentioned the decision of this matter last week. Considerable dissatisfaction is expressed on the ground that Mr. C. Bell's design was not selected as the best, but that by a small majority he was appointed architect to carry out the work. Every competition appears to bring its scandal.

THE ARCHITECTURAL EXHIBITION SOCIETY.

A strong appeal is to be made to the profession generally for earnest support to prevent the collapse of this institution,—in the proper maintenance of which all are interested. We shall hope to find it responded to with warmth.

FROM NEW ZEALAND.

Dunedin.—A presbyterian church is now in process of erection at Dunedin, the capital of the Scottish colony of Otago, on the south-east side of Middle Isle, or New Munster. The edifice is called the new "First Church." It occupies a prominent site in the centre of the city, within a large reserve set aside for church purposes at the time the province of Otago was first colonised. The foundation stone was laid by Dr. Burns, who accompanied the first colonists, in 1848, to their new home in this distant isle. The length of the building now erecting is, over all, 173 ft., its width 91 ft., and its height inside from the floor to the top of the exposed work, 51 ft. The tower in front is 20 ft. square, independent of the buttresses, and its height 180 ft. About 50 ft. of the rear end of the building, at a reduced width, is intended for a lecture-room. The church is being built of white stone, known as Oamaru stone, with inside lining of brick. The cost is 14,000*l*., and when completed the church will be the largest ecclesiastical structure in New Zealand. The building was begun in January, 1868, and its walls are now some 12 ft. above the foundation. The architect is Mr. R. A. Linton; and the contractors are Messrs. Hunter & Goodfellow.

CHURCH-BUILDING NEWS.

Bampton.—Clanfield Church has been for many months closed for repairs and restoration, and has been re-opened. The plans for restoration were drawn up by Mr. John Luker, of Faringdon; the contractor for the church was Mr. Smith, of Highworth, and for the chancel Mr. H. J. Clinch, of Charlton, near Islip, son of the churchwarden of Clanfield.

Ryde (Isle of Wight).—The new parish church is making satisfactory progress. When the corner-stone was laid on the 4th of August last, the walls were up to a level with the top of the plinth. Shortly after the ceremony had taken place, Messrs. Jackson & Shaw, the contractors, made an offer to the committee to substitute Swanage stone for the facing to the walls, in lieu of Binstead rag and lime stone, which were specified to be used. Their motive for making this offer was understood to arise from a desire to push on the works faster than they would be able to do with the limited supply of stone from the Binstead quarries, which may be said to be now all but worked out. Mr. Scott having reported favourably of the qualities of Swanage stone, which had been used by him some years since in the restoration of Chichester Cathedral, the committee accepted the offer of the contractors, who have pushed on the works with vigour. The walls are carried up to a considerable height; those of the north aisle to a level with the springing of the window tracing.

The nave piers, with their capitals, are also fixed, as well as the responds of the tower and chancel arches. The latter show a contrast by the introduction of red Mansfield stone for the columns, or shafts, supporting the capitals. The committee have it under their consideration to proceed with those portions of the church which were not included in the present contract. Efforts must be made, however, to raise the necessary funds. Mr. Bindley is acting as Mr. Scott's representative in the superintendence of the work.

Hunslet.—The new church of St. Silas, at Hunslet, has been consecrated by the Bishop of the diocese. The foundation stone of the new edifice was laid in July of last year, since which time the work of erection has been rapidly pushed forward by the Leeds Church Extension Society, who have defrayed the entire cost, supplemented by some pecuniary aid from kindred associations. The new church of St. Silas consists of nave, aisles, and chancel, with organ-chamber on the south, and vestry on the north, side of the chancel. There are also at the west end two porches, entering from the north and south respectively. The nave is divided from the aisles by an arcade of five arches on each side, supported by pillars, alternately round and quatrefoil on plan, with moulded bases and caps, the former being visible above the seats, not hidden by them as is usual. The space that otherwise would have formed a sixth bay to the west end is occupied by doors from the north and south porches. The chancel is finished as an apse of five sides, with a single-light lancet window in each, and stone shafts in the angles, with bases corbelled out from the wall, bands and carved caps supporting the ribs of the roof. These ribs form pointed arches spanning the chancel, and meeting in a carved boss at the centre of the apse. They are each formed in several thicknesses of deal, and are bolted to the tie-beams and rafters of the principals, so as to form an additional tie or brace. The spaces between are boarded to the sawn curve so as to form a vaulted ceiling. The chancel arch, between the nave and the chancel, springs from the caps or pillars corbelled out from the wall on each side. The caps are carved with natural foliage, the fern being used on one side and the maple on the other. The corbels are formed as shields, bordered with foliage; the emblems of the Fall are carved on the shield on the north side, the emblems of the Redemption on the shield to the south. The organ-chamber has an arch opening into the chancel and one into the aisle, and the vestry has a similar arch towards the chancel, with a screen framed in pitch pine rising to a certain height. The fittings of the chancel are all of pitch pine. The other fittings of the church are all of red deal, and the whole are varnished. The font is of Caen stone, the bowl being octagon on a circular shaft. The floors of the porches, passages, chancel, &c., are laid with Staffordshire tiles, in red and blue. The church is heated throughout by hot-water pipes laid in grated channels in the floors; and it is lighted by large gas brackets over each pillar, smaller ones between the windows of the aisles, and a corona suspended from the boss of the chancel roof. The west end of the church has two tall narrow windows, with circles in the heads; and a centre buttress, with a circular window over it, quatrefoiled. Over these stands the belfry, with steep gable and iron cross, the body being pierced with a double arch and circle, within a larger arch. One bell, weighing 3 cwt., has been supplied by Messrs. Taylor, of Loughborough, and hangs in one of the smaller arches. The aisle windows are three-light, within one arch, the spandrel being filled in with a large cusped circle. Those of the clearstory are two lights, within one arch, and a circle in the spandrel. The glazing is throughout in lead, the heads and circles being treated geometrically, and bullions used in those of the aisle windows; but the lower portions are in rectangular quarries, within a border. The principal dimensions are as follows:—Nave, 92 ft. by 29 ft. 6 in. between bases of pillars, and 62 ft. high to ridge; aisles, each, 79 ft. by 11 ft. 6 in. from wall to pillar, and 24 ft. high to ridge; chancel, 33 ft. 4 in. by 24 ft., and 53 ft. high to ridge; organ-chamber, 14 ft. 6 in. by 12 ft.; vestry, 24 ft. by 15 ft.; porches, each, 12 ft. by 10 ft.; belfry, 90 ft. high to top of cross. The contractors for the various works are as follow:—Messrs. Longley & Sons, for mason work and joiner work; Messrs. Watson & Wormald, slaters; Messrs. Dawson & Son, plumbers (for whom Mr. T. Wilson did the glazing in lead); Mr. Miller, plasterer; Messrs. Galloway & Son, painters; Messrs. Heaps & Robinson, for heating apparatus and smith work; Messrs. Mawer & Ingle, carving and font; Mr. Kidney, lightning conductor,—all of them being Leeds tradesmen. The gas-fitting, locks, hinges, and cross were supplied by Messrs. Charles Smith & Sons, of Birmingham; and the tiles were laid by Messrs. Charles & Taylor, of Leeds. The chancel floor within the rail, and a broad footway from the nave up to the rail, are covered with a carpet designed by the architect, and made by Messrs. Wilkinson & Co., of Hunslet, who have given it to the church. The architect was Mr. Corson, of Leeds, who also designed and built for the society St. Clement's Church, Sheepscar, which was consecrated in September, 1868. The organ is being built by Messrs. Radcliffe & Sagar. It is blown by a patent hydraulic engine. The cost of the church, exclusive of the site and the organ, will somewhat exceed 4,100*l.* The edifice will afford sitting accommodation for 700 persons.

Brackley.—The Brackley Chapel of St. John and St. James (known as the College Chapel) has been opened to the parishioners of Brackley, after having been closed for nearly thirty years. The chapel is the only relic of the Brackley Hospital or Monastery of the Knights' Hospitallers of St. John of Jerusalem, at Brackley,—a religious house of very ancient foundation, which afterwards passed to Lord Lovell, and eventually to Magdalene College, Oxford, the present proprietors. The work of restoration, which commenced in April, is now completed. The work has been carried out under the plans of Mr. Charles Buckeridge, of Oxford and London, architect. Mr. Nurse was clerk of works.

Smethwick, near Birmingham. — St. Paul's Church, West Smethwick, has been re-opened by the Bishop of Wellington, New Zealand, after undergoing some important alterations. One of the principal features in the recent improvements is the roof, which is entirely new, and contains a considerable amount of ornamental and constructive detail. The interior has been thoroughly remodelled and beautified. The church is lighted at night by means of eight gaseliers suspended from the roof. The whole of the work has been carried out from the designs and under the superintendence of Messrs. T. C. & J. P. Sharp, architects, Birmingham.

Barnard Castle.—The general committee for the restorations of the parish church have reported that the works have thus far progressed satisfactorily. The foundations of the walls and pillars in the nave and aisles, being found very bad and insecure, have been underpinned and rebuilt where needed, the surrounding accumulation of earth removed, and stone channelling, laid outside the walls to convey away the water and prevent damp. The outer and inner walls have been and will be repaired, restored, strengthened, and cleansed, and new windows, where needed, introduced. The lead and oak roofs, being found in a decayed and dangerous state, have been entirely taken off and renewed. The unseen bad condition of the roofs and foundations has occasioned a considerable and unexpected increase of expense. The chancel is being restored by Trinity College. In reference to the ancient steeple, it was hoped that if repaired in some defective parts, it might stand; and therefore the estimates included a small sum only for underpinning and repairing the buttresses, but upon a further examination the steeple was found altogether so insecure in the foundations, and so ruinous and tottering in the lower Norman portion, that it was deemed necessary for immediate safety to prop it temporarily with timber until funds be raised to take it down and rebuild it, which must be at once effected. The first estimate for restoring the nave and aisles, and underpinning the steeple, was 1,800*l.*, which is found to be insufficient. The voluntary subscriptions (received or promised) of the principal landowners and others, supplemented by a collection from house to house, and including special subscriptions for the new clearstory windows, amount to 1,959*l.* 11s. 3d. It is now ascertained that in order to complete the nave and aisles (exclusive of the steeple) the further sum of 700*l.* is wanted; and that the erection of a new steeple will require 1,000*l.* more, making together a total of 1,700*l.* now to be raised.

St. Columba's Church, Kingsland-road. We are asked to mention that the roofs of this church are covered with Whitland Abbey green slates.

DISSENTING CHURCH-BUILDING NEWS.

Farsley.— A new Baptist Chapel has been opened here. The building is 90 ft. long by 54 ft. wide, and 40 ft. in height from the ground-floor to the crown of the ceiling, affording room for 1,200 sittings—650 on the ground floor and 550 in the gallery. A lobby 17 ft. by 8 ft., with folding-door and plate-glass panels, leads at each end to the body of the chapel and to the gallery stairs. In the rear of the chapel there are two vestries,—one for the minister, 14 ft. by 13 ft., and the other for week-night meetings, 35 ft. by 14 ft., the latter being convertible into two rooms by a moveable wooden partition when required for baptismal purposes. The ceiling of the chapel is a flat segment: the roof-beams are dressed and varnished, showing beneath the ceiling. The gallery is supported by ten ornamental cast-iron pillars each 9 ft. 6 in. in height. It is circular in shape at each end, and has an open area in the middle, 48 ft. long by 26 ft. wide. The gallery front is formed into panels, decorated with ornamental trusses painted white and tinted with gold size, and finished with a mahogany capping for books. The pews on the ground floor, as well as those in the gallery, have sloping backs, yellow pine being used for the pews and internal woodwork. Externally the chapel is of Italian design, having a projecting porch at the front 25 ft. wide, consisting of six rusticated piers next the wall, and finished with an entablature and ornamental vases over the piers. Over the portico is an ornamental Venetian window, the remainder of the windows having moulded circular architraves and pediments, with horizontal cornices. A cornice runs round three sides of the chapel, rising into a pediment in front. The chapel stands in the centre of an acre of ground, which is being laid out ornamentally. The architect is Mr. John Simpson, of Leeds. The total cost of the chapel, including the boundary walls, warming, lighting, architect's commission, and legal expenses, will be about 4,000*l.*

Launceston (Cornwall).— A new Wesleyan chapel has been begun in this town, from designs selected in competition by Messrs. Alfred Norman & James Hine, architects, Plymouth. It will be in the Early Decorated style, and consist of nave, with clearstory, aisles, transepts, and chancel. Including a small west gallery, the accommodation will be for about 700. It is proposed to build a tower and spire at the north-west angle, and there will be a school and class-rooms adjoining the church. The contract account is 3,008*l.*, and Mr. Blatchford, of Tavistock, is the builder.

Sheffield.—The memorial stone of the new Baptist Church, in Glossop-road, has been laid. The edifice is in course of erection on a site immediately above the junction of the Glossop and Northumberland roads, and will be a conspicuous building. The style is Geometric, adapted to suit the requirements of dissenting worship and the peculiarities of the site. The front to Glossop-road presents a large gable containing a tracery window of five lights, beneath which is the principal doorway, which has two openings with trefoil heads, surmounted by a canopy. The shafts of the columns which support the canopy, are of polished Aberdeen granite, the central shaft resting upon the memorial stone. At the sides of the front gable are the gallery staircases, the one nearest the town being carried up in the tower, which rises to a height of 140 feet, terminating in a pinnacled octagon spire. The arrangement of the doors will admit of easy access to the church, either by steps from Glossop-road or from the level of the side street. The sides of the church have alternately two- and three-light tracery windows, and the roof at the sides is relieved with five gables. The slating is arranged in ornamental patterns. Internally, the ceiling will be boarded. The baptistery, lined with Minton's majolica tiles, will be placed in a chancel-like recess behind the pulpit; and at the side of it the organ is to be fixed on a raised tribune. There are three vestries, respectively for the minister, the deacons, and ladies. Seats are provided for 500 persons in the body of the church, on benches 3 ft. wide, and for 320 persons in the gallery, which occupies three sides, making a total of 820 adults. The internal woodwork will be of pitch pine. The school behind the church is arranged to accommodate 250 scholars in one room, besides which are infants' school-room and six separate class-rooms. The scholars can pass from the school to the church under cover. The care-taker's house con-

tains five rooms distinct from the other parts of the building. The cost of the structure will exceed 5,000*l*. The contractors for the masonry are Messrs. B. & T. Nelson. Mr. Wm. Dickinson is the clerk of the works. The other contractors are for joiners' work, Messrs. Garside & Shaw; slating, Mr. Ellis; plastering, Messrs. Harrison & Chadwick; plumbing and glazing, Mr. Cropper; staining, Mr. Jenkinson; warming, Mr. Hydes. The architects are Messrs. Innocent & Brown, of Sheffield. With organ and fittings, the building will probably cost little short of 6,000*l*., exclusive of the site.

Chesterfield.—The foundation-stone of the new Wesleyan Methodist chapel to be erected on the site of the old one, in Saltergate, has been laid by Sir Francis Lycett, of London. Mr. Edward Taylor, of York, is the architect.

Walthamstow.—The memorial-stone of Trinity Congregational Church, Walthamstow, has been laid. The building is of Kentish rag, with free-stone dressings, and will be capable of accommodating nearly 600 persons. The contract has been taken by Messrs. Dove Brothers, at 3,100*l*. The total cost will be about 3,800*l*., and a previous expenditure of 900*l*., for school-houses, &c., will bring it to about 4,700*l*.

Tendring.—A newly-erected chapel, belonging to the Wesleyan Methodists, has been opened for public worship in this parish. The building, which is capable of seating 200 persons, together with a school-room, was erected at a cost of 850*l*., which sum, with the exception of 200*l*., has been entirely raised by voluntary subscriptions. The design for the building was by Mr. Barnes, of Ipswich, architect; the builders being Messrs. Saunders, of Dedham.

Grantham.—The memorial stone of a new Congregational church has been laid at Grantham. The church is planned to seat upwards of 600 persons, and consists of a nave and two side aisles, divided by painted arches on columns having carved capitals and moulded bases. The design is in the thirteenth-century style of English architecture. The walling is of Ancaster rag, and the dressings are of Ancaster freestone. Vestries are attached to the church, and schools have been planned in connexion with it. A minister's house is also in course of erection on the same site. The contract for the entire work has been taken by Messrs. Rudd & Son for 3,229*l*. The architect is Mr. Tait, of Leicester.

Northampton.—The new Iron Chapel for the Independents, which has been erected in Victoria-road, in this town, at the sole expense of the Rev. E. T. Prust, minister of Commercial-street chapel, has been opened for divine service. The chapel has been erected from the designs of the iron-church builders and engineers, Messrs. Francis Morton & Co., of London, Liverpool, and Glasgow. The principal framing of the church is of timber scantling, covered on the outside with Morton & Co.'s galvanised plates and iron tubes, the roof being also felted and boarded. The main supports are secured to masonry foundations. The ground body of the church is a parallelogram of 57 ft. by 35 ft., with a tower, 60 ft. high, facing the street. The tower is surmounted with finials. The chapel is lighted with Gothic side windows and ornamental circular or rose windows in the gables. Attached to the chapel is a school-room, constructed of the same material. Ventilation is provided for by a double ridge piece, and along the lines of the eaves, and by openings in the windows. The wood-work is stained with oak colour of various tints, and the side walls are finished with plaster. At night the building is lighted with burners suspended from the roof. The chapel is warmed.

Bedford.—During the past ten months a new building has been in course of erection in Mill-street, to supersede the very old and incommodious chapel, formerly and for many years occupied by Baptists. The work having arrived near completion, the opening ceremony has taken place. The old building being found inadequate it was resolved to purchase the property in the foreground in order that by its removal an increased area might be obtained, with an elevation also to the main street. This having been accomplished, instructions were given to Mr. Usher, architect, Bedford, to prepare plans for the new building at a moderate cost. The design is Romanesque in character. The chief materials used in the structure externally are bricks, stone of several colours, and slate. The front elevation assumes the gable form. The entrance doorways are formed of wrought Mansfield columns on stone bases, with moulded and carved capitals, and extended and continuous frieze, carved; the voussoirs with which the arches are constructed are in alternate Bath and Dunston stone, with moulded and incised key-stones and moulded label. The central and principal feature of the elevation is a five-light window, constructed with similar materials to the doorways; it is 20 ft. wide and 17 ft. high, with carved capitals and a vandyke frieze extending to each extremity of the front; and above this window is an Ogee arched recess, containing a Bath stone scroll with raised letters, "Baptist Chapel, erected 1869." The ascent to the chapel is by a flight of stone steps, and the area will be enclosed by a wrought-iron fence with folding gates. The interior of the building is approached through a lobby, at the end of which are stone stairs for access to the galleries. The plan consists of two aisles with open seats, with moulded ends of pitch pine, a book-board, hat-rails, and sufficient space to kneel. The platform is on a slightly raised dais, approached by a double flight of steps. The baptistery is immediately in front of the platform, with a double flight of steps, and is supplied with water from the public works; it is lined with Keene's patent cement, and surrounded by a stone curb. There are galleries on three sides of the building, and an upper gallery for the children over the front entrance. All the timbers are free from plaster, and varnished, and the fronts are of arabesque open work, supported on cast-iron columns with foliated capitals. The roof construction consists of six laminated iron and wood ribs, in the form of an arc, resting on carved corbels. In consequence of the nearness of the surrounding buildings, the architect has implanted an ornamental clearstory, 40 ft. in length, in the roof, composed of thirty-two ogee-headed lights, by which means light is diffused throughout the building, and ventilation effected. The altitude from the floor to the ceiling of the clearstory is 54 ft., and to the external apex it is 58 ft. The number of sittings is 720. The mode of lighting at night is by star burners suspended from the roof. In the rear and on the east side of the chapel there is a commodious suite of school-rooms and class-rooms, with minister's vestry; and in the basement kitchen and store-room, accommodation for tea-meetings, &c. The total cost of the chapel and site is about 2,700*l*. The builders were:—Bricklayers and plasterers, Messrs. Smith & Mercer; mason, Mr. S. Jarvis; carpenter, Mr. John Hull; plumber, &c., Mr. T. Carling; ironwork, &c., Mr. W. W. Kilpin.

Wolverhampton.—The congregation of the United Presbyterian Church are about to erect a chapel adjacent to their school-room, where divine service has hitherto been held, on the Merridale-road. The chief stone has been laid. The general plan of the new building is 75 ft. in length by 48 ft. in breadth, and it will be roofed in one span. The elevation of the west front will be that of a centre gable, with a tower and spire at the north angle, and a staircase wing at the south angle. The height of the tower and spire will be 68 ft. The chief features of the west front will be a central doorway with a grouped four-light and rose-headed window. On each side will be gallery staircase doorways, with single-light window on the second stairs. The building will be faced with Cefn stone. Internally the plan of the sitting on the ground floor will be divided into three bays by two side passages. It is intended to erect galleries, though only a west gallery is included in the present contract. The interior will be ceiled at the level of the wall-plate, a deep cove, springing from the imposts of the second tier of windows, being continued all round. The centre of the ceiling will be of an arched form, and the total height from floor to ceiling will be 34 ft. On the south side of the church will be a vestry for the ministers, and hereby also will be out-buildings in connexion with the Sunday School and Lecture-room. The contract has been taken by Mr. Cookerill, of Wolverhampton, builder, for about 2,400*l*. The architect is Mr. Bidlake, of the same town.

Bolton.—A new chapel in connexion with the Baptist denomination has been opened in St. George's-road, Bolton. It is in the Italian style, with a portico to the front entrance, and around the chapel is a gallery with a semicircular sweep at each end. Accommodation is provided for upwards of 1,000 persons. Beneath the chapel is a school-room, containing eight class-rooms, three of which are obtained by the introduction of a mezzanine floor and balcony at one end. This room will seat 500 children. The architect of the building is Mr. George Woodhouse, of Birmingham; and the contractor Mr. J. Robinson, of Hyde. The total cost, including furniture, has been about 6,500*l*., of which a considerable sum has yet to be raised.

Walsall.—The Baptist chapel, Stafford-street, has been re-opened for divine worship. The building, the foundation-stone of which was laid by the borough member a few months ago, is an improvement upon the old structure, which stood on the same spot, and part of the shell of which has been made available for the new chapel. The new edifice contains about 750 seats, being something like 250 more than the old building; and in addition to being more lofty than it, it is furnished with open stained pine seats, and is decorated. It is also supplied with commodious vestries, and school-rooms, capable of accommodating 600 children. The work of rebuilding has been carried out by Messrs. Trow & Son, of Wednesbury, under the direction of Mr. G. Ingall, of Birmingham, architect. The cost will be about 1,800*l*., of which in round figures 1,000*l*. have yet to be raised.

SCHOOL-BUILDING NEWS.

Bloxham.—The new wing of All Saints' School has been opened. The new wing, as the rest of the buildings, has been erected by Mr. T. Barrett, of Bloxham, after designs of Mr. G. E. Street. It forms the third side of the quadrangle, and comprises on the road level, kitchen, larder, and other offices; and on the ground level of the rest of the buildings, a large dining-hall, 70 ft. by 23 ft., and 18 ft. 6 in. in height, with a lift from the kitchen into it. Above this again are two floors containing dormitories, master's rooms, wardrobe-room, &c., access to all of which is gained by an oak staircase, connected with the old part by a porch and passage as well as by the staircase of the older buildings. The building has been furnished with steam boiler, steam kettles, and hot-water apparatus, by Messrs. Benham & Sons, of London; and with gas-fittings by Mr. Potter, from designs by the architect.

Reading.—The new school-room erected at the rear of the Baptist Chapel, King's-road, has been opened. The building is 60 ft. long by 25 ft. wide and 30 ft. high. The rafters are of stained deal, corresponding with the seats and pulpit. There are two porches, 6 ft. wide, on either side, and three class-rooms beneath. A small iron girder trellis bridge crosses the Holy Brook. The architects were Messrs. W. & J. T. Brown. The site, which was estimated at the value of 150*l*., was the gift of Mr. J. H. Blagrave, Calcot Park.

Books Received.

Our Iron-clad Ships: their Qualities, Performances, and Cost; with Chapters on Turret Ships, Iron-clad Rams, &c. By E. J. Reed, C.B., Chief Constructor of the Navy, &c. With illustrations. London: Murray.

This volume will satisfy public curiosity and respond to an immense deal of public disquisition on the subject of iron-clad ships. The iron-clad ship question is so continually under discussion in the public press, and is justly deemed of so much importance to the country that the publication of further information respecting it appeared to the author to be in many ways desirable; and here it is, and given by the fittest hand to satisfy the requirement. The work forms an appropriate sequel to the author's previous book on "Shipbuilding in Iron and Steel." It frankly and freely discusses the respective merits of our individual iron-clads, and forms a very interesting and important volume. One of the results of its publication, Mr. Reed trusts, will be to induce persons to look a little more closely than heretofore to the true causes of the different performances of the ships, both under steam and under canvas. He considers it not only idle but against common sense and experience to visit upon the designer all those shortcomings which are obviously the consequences of imperfect management. The best seamen in the navy know well that ships perform very differently in different hands. "It is only those who have combined great ability with great devotion and professional love of their work who have been eminently successful in establishing that delicate and beautiful relationship between the ship, the sails, the helm, and the wind, which is essential to great success in this branch of the sailor's art."

The volume treats in separate chapters on the varieties, the armour, armament, structure,

steaming, sailing, rolling, dimensions, forms and proportions, and cost of the iron-clads; also on turret ships, iron-clad rams, and the conversion of line-of-battle ships into iron-clads. There is an appendix on the stability of Monitors under canvas.

Miscellanea.

Prehistoric Monuments of the Channel Islands.—At the meeting of the International Congress of Prehistoric Archæology, held last year at Norwich, a committee was formed for the purpose of inquiring into the present condition of the prehistoric remains in the British Isles. Subsequently the functions of this committee were transferred to the Ethnological Society, and the first fruits of its labours in this direction have just appeared in the shape of a valuable report on the prehistoric monuments of the Channel Islands, prepared by Lieut. Oliver, R.A., and read before the society. The Channel Islands are remarkably rich in megalithic structures of noble proportions, but from their unprotected state they have for the last fifty years been subject to the most ruthless destruction. Not only have they been demolished by the hands of the navvy and of the mere treasure-seeker, but they have also suffered considerably from injudicious attempts at restoration. The report is divided into chapters, treating successively of the remains in Guernsey, Herm, Sark, Jersey, and Alderney. Lieut. Oliver alluded to the resemblance between many of these megalithic monuments, and those in Madagascar, erected at the present day by the hill tribes of Hovas. Other reports on our prehistoric structures are in preparation, and will probably be submitted to the society at an early date.

Costly High Altar in New York.—St. Stephen's is the largest of the Roman Catholic churches in New York, and has been erected at great cost. The correspondent of the *Morning Post* describes the completion in it of a high altar of white marble, costing 35,000 dollars, with two side altars of the same material. The grand altar is 45 ft. high, and is a magnificent temple in itself. It has been executed by artists of great skill and taste, and I have seen nothing here or in Europe which is superior to it in beauty. Above and behind it, filling the entire space to the roof of the chancel, is a colossal painting of the Crucifixion, by Brumidi, an Italian artist well known in the States, and who has in this painting, despite some glaring faults, achieved a wonderful work. The paintings above the side altars, of the Blessed Virgin and St. Joseph, are by the same artist, and represent the Immaculate Conception and the Martyrdom of St. Stephen. Throughout the rest of the church, in niches, are the figures of five female and five male saints; and the roof, arched and groined, and supported by groups of delicate and graceful columns, is a heaven of blue, studded with golden stars."

The Site of Trajanopolis.—The often sought-for site of the Roman city of Trajanopolis has recently, it is said, been discovered. The remains have been found in an extensive marshy district near Enos, a league and a half from Dymes, at the mouth of the Hebrus. That these are really the ruins of Trajanopolis is supposed to be proved by an inscription found on a stone built into a monument erected by the Romans, [and on their situation being in exact accordance with the position assigned to the city in ancient books of travel. The ruins are very extensive, and a mere cursory inspection shows that an acropolis formerly existed there, the remains of edifices of the third century, consisting of architraves, broken columns, pedestals, and some inscriptions, fully establishing this.

The Serpentine.—A correspondent writes,—Can any one of your numerous readers inform the remainder what is being done, and to what end, at the Serpentine in Hyde Park? You may pass week after week, and see the same men shovelling the same mud into a heap, to be reshovelled into another heap, and so on, to all appearance *ad infinitum*. Truly, it does seem queer. Why was it not made publicly known what was to be done in detail, and the number of weeks it would take? The public would then have been prepared, and would not grumble as they now do, knowing nothing of the curious process.

The Suez Canal.—Mr. C. Clarke, President of the Liverpool Chamber of Commerce, has read a paper there on the "Suez Canal," from which he has just returned. Mr. Clarke's conclusions are that, as regards the silting at Port Said, it may be necessary either to fill up permanently the interstices between the blocks which form the western breakwater, or dredge away the bank as it is formed. Either course is practicable, and may be taken at a moderate expense. With respect to the injury of the banks by wash, it may be necessary, in several portions of the canal, to reduce the slope of the banks, and to pitch them with stone to a height of 2 ft. or 3 ft. above the water line. This is already being done between Suez and the Bitter Lakes. There are inexhaustible supplies of stone in the mountains near Suez, and the cost of transport now would be trifling. The fear of the canal drying up by evaporation Mr. Clarke regards as chimerical. The filling of the canal by shifting sands is a real danger, though greatly exaggerated. Of the hundred miles which form the entire length of the canal, about 57 miles are made through lakes which have existed as natural basins for at least 2,000 years without being filled with sand. Of the remaining 43 miles the greater part consists of a mixture of sand and gravel, in consistency resembling a garden walk. The enormous dredging-machines will dredge out in a month all the sand which is likely to be blown in in a year. The cost of maintaining the canal when completed, an eminent English engineer on board estimated at 60,000*l.* per annum. As regards the prospects of the canal as a paying investment, Mr. Clarke confesses himself unable as yet to arrive at a satisfactory opinion.

Death of Mr. George Smith, C.E., Belfast Harbour Engineer.—Mr. George Smith, C.E., was for twenty-four years the resident engineer of the Belfast Harbour, and during that long period of active service did a large amount of work. He was an Englishman, and was appointed Harbour Engineer in 1839, on the recommendation of Messrs. Walker & Burges, the engineers, who at that time designed some improvements in the harbour. Mr. Smith was previously engineer of the Leeds and Selby Railway. It was under his superintendence that the new cut at the Queen's Island and the channel between the Twin Islands were formed, the contractor being the late Mr. Dargan. The Queen's Quay, Clarendon Dock, and all the timber wharfs on the Down and Antrim sides of the river, were also constructed under his superintendence. He was the architect of the new Harbour Office; he designed the lighthouse on Holywood Bank, and all the great improvements in the harbour of Belfast completed during the past thirty years, were carried out under his management. From failing health he became unable to continue the more active duties of his office, and in 1863 he was appointed Consulting Engineer to the Harbour Board. For some time past increasing infirmities and age proved too much for him, and on the 3rd he expired at the age of seventy-seven.

Gift of a Public Park to Warrington.—Colonel Wilson-Patten, M.P., who resides in the town, and is a large landholder, has expressed his intention of presenting the borough with eleven acres and a half of land to be used as a public park for the people. The right hon. gentleman added that his property had so increased in value lately, owing to the prosperity of the town, that he felt himself compelled to do what he proposed to do, so that the inhabitants of the borough might enjoy the benefit of a public park, and participate in his prosperity. Colonel Patten wishes that the land should not be laid out as an ornamental park, but left open for purposes of recreation and out-door amusement, stipulating that the Militia and Volunteers should have the use of it as a drill-ground. The mayor and corporation have expressed the gratitude of the inhabitants, and formally recorded their feelings, upon the minutes.

The Ventilation of the Law Courts.—It is asserted that the death of Mr. Justice Hayes was accelerated by the foul air of the court over which he presided. Whether this be true or not, we know, and have often pointed to the fact, that the atmosphere of the law courts is very far from being as pure as could be desired; in truth, at times it is little less than pestilential. We have here an additional reason for the speedy erection of new courts.

The Cooke Memorial, Belfast.—The committee of May-street Church, where the late Dr. Cooke preached, have given the erection of his memorial to Mr. John Robinson, of Belfast. It will be a mural monument, and will be erected in the vestibule at the sides and over the door leading into the central aisle, and will be 21 ft. long by 15 ft. high. There will be a pedestal at each side, of red Peterhead granite; and on each of these will rest two Corinthian columns of Carrara marble, about 9 ft. high, surmounted with an entablature of similar marble, polished and showing breaks over columns. Surmounting the door, and from door to columns, will be verde antique marble, and between each pair of columns will be white marble slabs for the inscriptions. Over these are panels, eventually intended to be filled in with sculptured bas-reliefs, and over the panels will be carved festoons. The columns and entablature will be after the best examples of ancient Roman work, the various members of the entablature being carved; the frieze, also, and other parts, will have carved ornament. The cost, when completed, will be over 500*l.* The design and working plans have been supplied by Mr. J. Boyd. Messrs. Boyd & Batt are the architects.

Local Taxation in the Metropolis.—An elaborate return, in a tabular form, has been prepared by Mr. John Pollard, clerk of the Metropolitan Board of Works, "showing the total amount of local taxation in the metropolis for the year ending March, 1867 (including the poor, county, and police rates, and the amounts raised to meet the precepts of the Metropolitan Board of Works); the rateable annual value of property in the metropolis according to the county and poor rate bases, with the rate in the pound on each of those rentals; also the population, the area in statute acres, and the number of persons per acre according to the last census (1861). We may give a few of the totals and averages. The population was 2,808,944; the rateable annual value, as per county-rate, 16,196,547*l.*; as per poor-rate, 16,019,895*l.*; the total amount of local taxation by various authorities, 1,526,843*l.* 16*s.* 3*d.*; rate in the pound, as per county-rate, 1*s.* 10½*d.*; poor-rate receipts, 1,683,750*l.* 17*s.*; rate per pound, 2*s.* 1*d.* Mr. Pollard has performed well a very laborious work.

Windsor Parish Church.—The foundation-stone of the new chancel of the parish church of New Windsor was laid on Monday by her Royal Highness the Princess Christian. The proposed work consists of a new chancel, the reseating of the interior, and such other alterations, both in the exterior and interior, as will bring it more into harmony with the present character of ecclesiastical buildings. The erection of the new chancel will be a considerable enlargement of the church. The cost of the entire scheme is estimated at about 8,000*l.*; but at present only a portion of the work is contemplated, consisting of the erection of the chancel and organ chamber, the reseating of the church, and the reconstruction of the western gallery, which has been contracted for by Mr. Kelly, builder, of Windsor, for 4,168*l.* The chancel will be proceeded with during the winter without interfering with Divine worship.

The Accident at King's College and the Metropolitan Board.—At the usual weekly meeting of the Board, a letter was received from Mr. Cunningham, secretary to King's College, dated December 6th, stating that on that morning a most alarming accident had occurred at the college, in consequence of the works which had been going on with the Embankment and railway. A large portion of their terrace had fallen, carrying away the dining-hall and kitchen; but happily no loss of life had occurred. Had it happened at one o'clock, 160 lives might have been lost. The solicitor to the Board had replied that no works had been executed by the Board near there for some years, and they were in no way responsible for the accident. A copy of the letter had been sent to the solicitors to the Metropolitan District Railway Company.

A Cordovese National Exhibition.—The rules and regulations of an Exhibition at Cordova (Argentine Republic), in South America, have been issued, and an English form printed at the *Standard* Office, Buenos Ayres. The Exhibition is to be opened on the 15th of October, 1870. From what is said as to foreign exhibitors, it would seem to partake, to some extent, of the nature of an international exhibition.

The Sanitary State of Paddington.—Practical sanitary hints have been issued in a printed form by the medical officer of health as to the best measures for preventing the spread of the "catching" or epidemic diseases, such as scarlet fever, small-pox, measles, typhus, &c. These hints relate to pure drinking-water, drains, sinks, closets, &c., dust-bins, ventilation, food, the sick-room, infected clothing and bedding, &c.; and particularly as to disinfectants. Of these the medical officer says:—

"The most generally known disinfectants are chloride of lime, Condy's fluid, Burnett's fluid, and carbolic acid. Of these four, Condy's fluid is one which, in all circumstances, is most efficacious and unobjectionable. Its active principle is oxygen, which has no odour, and is the very agent by means of which ventilation and fresh air promote natural disinfection; chloride of lime and chlorine require care and experience in management; when used too freely in inhabited rooms, they give rise to irritation of the air passages and lungs, among the inmates. Burnett's fluid and carbolic acid are poisonous as well as comparatively inefficient. . . . By the addition of a small quantity of muriatic acid (spirit of salt), to solution of Condy's fluid, chlorine gas is slowly disengaged in a state of great purity."

The circular is signed "Wm. Hardwicke, M.D., medical officer of health." Poor persons are offered small quantities of disinfectants at the Vestry-hall.

A Convertible Billiard Table.—Many persons would be glad to have a billiard-table in the house, but have not space they can specially devote to it. Messrs. G. & H. Story, of Coleman-street, have devised something that may meet these circumstances, namely, a combined billiard and dining table; and they place among its advantages economy, as the game of billiards can be played on a table costing half that of an ordinary billiard-table, with a large handsome dining-table combined. The dining-table is converted into a billiard-table in a minute by a simple screw movement, which can scarcely get out of order. When raised, the billiard-table is complete and perfectly level, without the least vibration. It ought, of course, to stand on a sound, stable floor.

Worcester Cathedral Clock and Bells.—The peal of twelve bells, and the extra bell required for the Westminster quarter chimes, are now completed, and have been sent to Worcester during the week. Men have been for some weeks engaged in fixing the massive oak frames for their reception in the cathedral tower. The huge beams forming the frame-work filling up the shell of the tower are so constructed as to carry the weight of the whole to the base of the tower, resting mainly upon the four great piers which support that structure, and conveying the thrust as nearly as possible to the ground, so that the stability of the tower may not be affected.

Honorary Work in the City.—At the last meeting of the Court of Common Council, Mr. Isaacs, chairman of the City Lands Committee, presented a report from that body, recommending that Mr. Thomas Henry Fry, Deputy, be presented with a service of plate, at an expense not exceeding 500 guineas, as a suitable mode of testifying the appreciation of that Court for his services throughout the execution of the Holborn Valley Improvement works. The report was adopted with acclamation, and the Court adjourned.

Death of Mr. W. Jones, of Derby.—We hear of the sudden death of Mr. William Jones, of Derby, building surveyor; a gentleman much esteemed by all who knew him, on account of his many excellent traits of character, both in business and social life. Mr. Jones was the brother-in-law of the Derby borough surveyor (Mr. Geo. Thompson, C.E.). The professional skill of the late Mr. Jones was estimated at a very high rate, both by the master builders and operatives of his neighbourhood.

The St. Petersburg Exhibition, 1870.—There seems to be some misconception afloat concerning this Exhibition. It has been announced officially that the Exhibition is to be strictly Russian, not international; and yet we have received from America full particulars of the arrangements that are being made by the different States to send to it suitable specimens of their produce. Commissioners have been selected to attend the Exhibition. How are the two accounts to be reconciled?

The Slade Professorship, Cambridge.—Sir M. D. Wyatt has been elected to the Professorship established under the will of the late Mr. Slade. What is the London University doing in the matter?

Wonders in Wine.—At the last sitting of the Academy of Science a paper was received from Dr. Scoutetten on a curious effect of electricity on wine. The house of a vine-grower at Digne (Basses-Alpes) was struck by lightning a few months ago. The fluid penetrated into the cellar and broke several casks, the wine of which flowed into a small vat which was purposely sunk into the floor to receive any liquid by accident spilt. The proprietor, thinking his wine was spoilt, at first sold it at the rate of 10 centimes a litre; but on tasting it some time after, found it excellent, and sold it at 60 centimes. Struck with the curiosity of the occurrence, he asked Dr. Scoutetten whether he could explain it, and was told that it could only be the result of electricity, a proposition which should be tested by direct experiment. This was done, and succeeded to such an extent that absolutely bad qualities have been transmuted into valuable drinks. To perform the operation the wires of the voltaic pile were tipped with platinum, to which were attached electropes of the same metal, and both dipped into the liquid to be improved.

Utilising Waste Heat.—Mr. E. Crowe, of Middlesbrough-on-Tees, employs a boiler of two horizontal tubes arranged one over the other, and connected by a number of upright tubes arranged at short distances apart along the horizontal tubes. The water-line of the boiler is at the diameter of the upper tube or thereabouts, and the boiler below this line is inclosed in a chamber of brickwork, into which at one end the products from the furnace enter, and which, at the other end, is connected with the chimney, so that the chamber is, in fact, the flue of the furnace. The sides of the chamber at the level of the vertical tubes are corrugated so as alternately to approach and recede from the vertical tubes, so that the draught is caused to pass in an undulating direction. This causes it to impinge more effectually on the vertical pipes, and at the same time sufficient space is obtained for a man to pass through the chamber to clean it from time to time.—*Mechanic's Magazine.*

Roman Remains, Maidstone.—Some interesting Roman remains have recently been found in Maidstone. As some workmen were lately trenching in the grounds of Mr. Fanchon, Upper Stone-street, they struck upon a hard foundation which appeared to be ancient remains. Before they had proceeded further with the excavation, Mr. Lightfoot, the curator of the Charles Museum, was called to the spot, and on a careful examination found that they were strictly Roman remains. Subsequently, Mr. Roach Smith examined them, and fixed the date at A.D. 300, or a little later.

Polytechnic Institution.—Last week Dr. Brewer, M.P., distributed the prizes and certificates to the successful candidates connected with the evening classes of this institution. The Prince Consort's prize was won by W. J. Wilson, who also took many others. This was the second occasion upon which this prize had been carried off by a member of these classes. Thanks to the chairman, to Professor Pepper, and the Rev. Prebendary Mackenzie, M.A., were carried. Some of our readers would do well to inquire as to these classes.

St. Martin-in-the-Fields Library and Reading-room.—The series of meetings arranged by the Rev. R. G. Maul, incumbent of St. John's District Church, Broad-court, terminated on Tuesday, the 14th, with "readings and vocal and instrumental music," affording a pleasant evening to a well-filled room.

The Marquis of Westminster's Statue at Chester.—We regret to hear that the state of the Marquis of Westminster's statue in the New Park, Chester, has led to a communication with Mr. Thorneycroft, from the legal adviser of the corporation, upon the subject.

District Surveyors.—At the meeting of the Metropolitan Board of Works, on Friday last, consent was given to the appointment of Mr. Arthur Allom, by Mr. Kendall, as his deputy, in the district of St. Martin-in-the-Fields and St. Ann, Soho, Westminster.

Aboyne Castle, Aberdeenshire.—Extensive alterations, rebuildings, and additions have just been commenced at Aboyne Castle for the Marquis of Huntly. The architect employed is Mr. George Truefitt, of London; and the builders are Messrs. Warrack & Daniel, of Aberdeen.

TENDERS.

For sewers at Perry-vale and Catford-hill, for the Lewisham Board of Health:—

Keeble	£5,958 0 0
Kent	5,190 0 0
Dowell	4,939 0 0
Beeton	4,900 0 0
Noel & Robson	4,640 0 0
Ivery	4,600 0 0
Wigmore	4,549 0 0
Gates & Bell	4,425 0 0
Anderson & Son	4,275 0 0
Crocket	4,240 0 0
Doverwood & Co.	4,229 0 0
Morris	4,177 0 0
Croker	4,168 0 0
Blackmore	4,100 0 0
Clark	3,990 0 0
Parker	3,985 0 0
Bloomfield	3,951 0 0
Young	3,900 0 0
Hubbard	3,839 0 0
Ford	3,815 0 0
Carter	3,800 0 0
Dadman	3,785 0 0
Cole	3,730 0 0
Hayward	3,650 0 0
Porter	2,900 0 0

(Another preposterous example.)

For mansion, with stable, &c., at Old Lands, Uckfield, Sussex, for Mr. A. Nesbitt. Sir M. Digby Wyatt, architect. Quantities by Mr. H. F. Gritten:—

Bushby	£16,800 13 4
Watson	15,433 13 7
Card & Sons	14,762 0 0
Ashby & Horner	14,513 0 0
Carruthers	14,343 0 0
Trollope & Sons	14,140 0 0
Jackson & Shaw	13,467 0 0
Colls & Sons	12,870 0 0
Rogers & Booth	12,594 0 0
Cheeseman & Co.	12,301 0 0

For a detached villa residence, museum, stabling, &c., on the Old Manor House Estate, Brixton, for Mr. J. C. Pearce. Mr. C. Sewell, architect. Quantities supplied:—

Taylor & Pitts	£3,914 0 0
J. & A. Wright	3,855 0 0
Staines & Son	3,788 0 0
Cubitt & Son	3,768 0 0
Heaver & Coates	3,749 0 0
Deaton	3,600 0 0
Wigmore	3,400 0 0
Parker	3,355 0 0
Nightingal	3,333 0 0
Cooper	3,287 0 0
Blackmore & Morley (too late)	3,215 0 0
Rankin	3,200 0 0
Rowe & Verran	3,188 0 0
Stone	3,060 0 0
Perry	3,047 0 0
Cook & Green	2,967 0 0
Pearce	2,923 0 0
Smith	2,886 0 0
Turner	2,875 0 0
Hughesden	2,849 0 0
Brown	2,710 0 0
Gates & Bell	2,650 0 0
Hutchinson (accepted)	2,500 0 0

For offices at Homerton, for Hackney Board of Guardians. Mr. Wm. Lee, architect. Quantities supplied by Messrs. Linsdell & Gifford:—

Crabb & Vaughan	£5,390 0 0
Newmann & Mann	4,765 0 0
High	4,749 0 0
Henshaw	4,727 0 0
Hearle	4,365 0 0
Nightingale	4,467 0 0
Perry & Co.	4,424 0 0
Browne & Robinson	4,410 0 0
Kelley, Bros.	4,332 0 0
Blackmore & Morley	4,310 0 0
Webb & Son	4,246 0 0
Hill, Keddell, & Waldram (accepted)	4,219 0 0
Turner	4,138 0 0
Hart	4,100 0 0
Hughesden	4,045 0 0

For Infirmary, North Aylesford Union, Strood, Kent. Mr. M. Bulmer, architect. Quantities by Mr. George Ruck:—

Pearson	£1,103 0 0
Pink & Co.	1,090 14 0
Church	1,070 0 0
Stump (Exors. of)	1,000 0 0
Wilkins	967 0 0
Miller	957 0 0
Clements	943 0 0
West	927 0 0
Gates	911 9 0
Sollitt	900 0 0
Anscomb	898 0 0
Naylar	893 0 0

For bar-fittings, counter, &c., at Dyers' Arms, Cannon-street, for Mr. Cann. Mr. Fred. Sparrow, architect:—

Bridgman & Nuthall (accepted)	£225 0 0

For Infirmary and Hospital Buildings for the Guardians of the Bangor and Beaumaris Union. Mr. R. G. Thomas, architect:—

Thomas & Son	£1,560 0 0
Williams	1,398 0 0
D. Roberts	1,365 0 0
Griffiths	1,350 0 0
Evans	1,250 0 0
Rogers	1,220 0 0
Chester	1,195 0 0
R. Roberts (accepted)	1,051 0 0

For new roof, &c., to Welsh Presbyterian Chapel, Menai Bridge, for Mr. Robert Davies. Mr. R. G. Thomas, architect:—

B. Thomas	£309 0 0
Pritchard	288 0 0
R. Roberts (accepted)	167 0 0